TEACHING BETTER NUTRITION

A Study of Approaches and Techniques

November 1950
Washington, U.S.A.

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

FAO NUTRITIONAL STUDIES No. 6

TEACHING BETTER NUTRITION

A Study of Approaches and Techniques

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NOVEMBER, 1950 WASHINGTON, U.S.A.

ACKNOWLEDGMENT

In preparing this book the author received much useful assistance from members of the staff of the Nutrition Division and other Divisions of FAO. The assistance of a number of outside specialists is also gratefully acknowledged, in particular that of Dr. Margaret Mead, of the American Museum of Natural History; of Patricia Woodward, lately Associate Executive Secretary of the Committee on Food Habits, National Research Council, U.S.A.; of Dr. Lydia J. Roberts, Department of Home Economics, University of Puerto Rico; of Dr. Margaret Read, Colonial Department, Institute of Education, University of London; and of members of the staffs of the Bureau of Human Nutrition and Home Economics and the Extension Service of the United States Department of Agriculture.

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Introduction

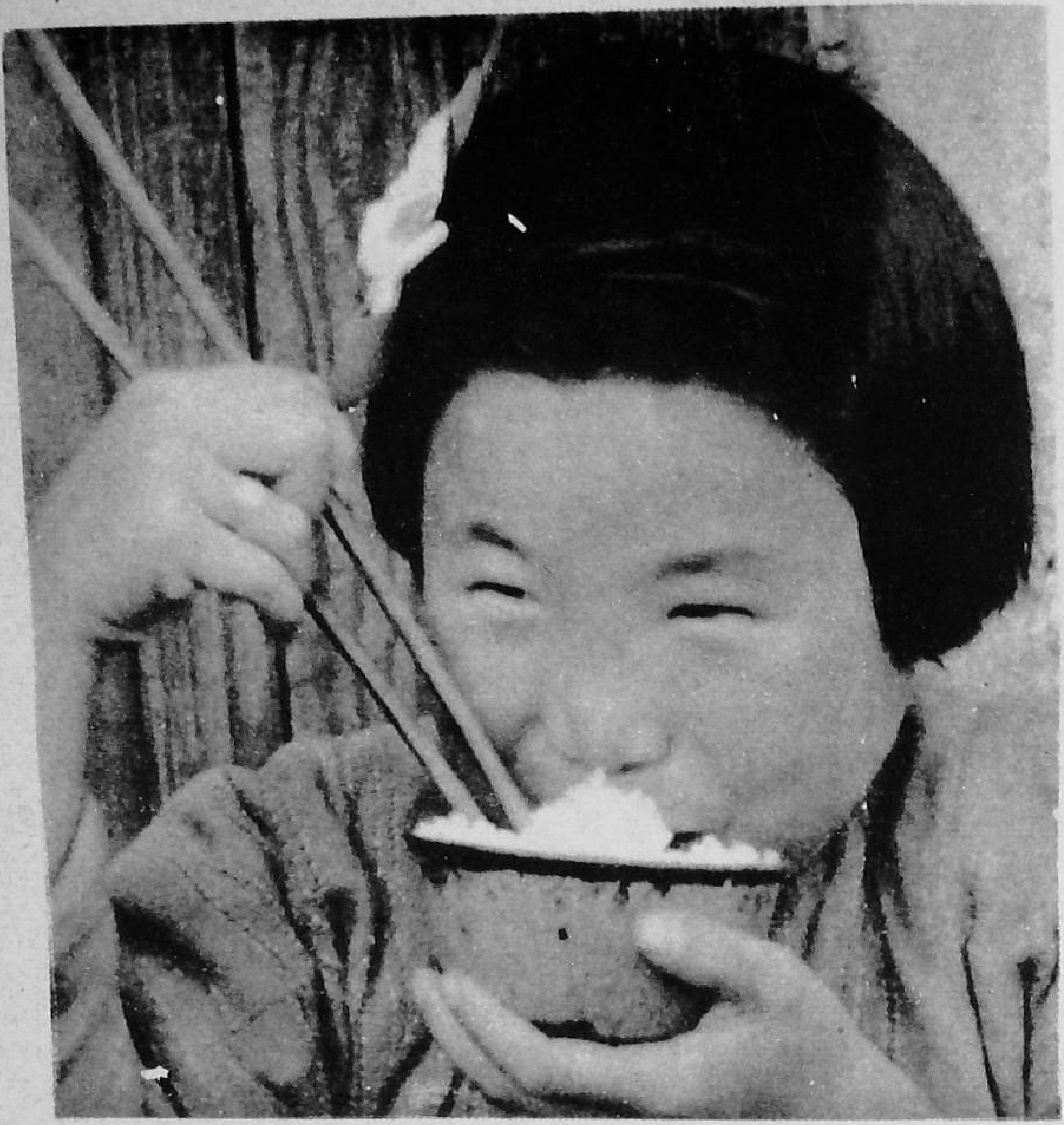
THE NEED FOR NUTRITION EDUCATION

Health and well-being are impossible without a good diet, satisfactory both in quantity and quality. While much remains to be learned about human dietary requirements, existing knowledge is sufficient to indicate the kind of diet needed for health and to show that a large part of the world's population does not obtain it.

Improvement of nutrition on a world-wide scale—the primary objective of FAO—depends in the first place on increased production and better distribution of food, accompanied by a rise in living standards. But it also depends on the right choice of foods. Education in sound habits of diet is therefore of the utmost importance. Even when the necessary foods are accessible in abundance, people do not always choose a good diet; and when choice is restricted by poverty and insufficient supplies, knowledge of how to make the best use of limited resources is especially important.

Human beings do not instinctively choose their diet in accordance with nutritional principles. They must learn what kinds of foods are needed for health. They must also learn techniques of producing these foods and methods of conserving and preparing them with an attractive appearance and flavor and with the least loss in nutritive value. Education in nutrition thus covers a wide field. It cannot be confined to telling people what they should eat; such advice may be impractical unless it is accompanied by guidance on how to obtain and use the foods that are needed. It must give due weight to existing dietary practices and take account of purchasing power. When purchasing power is too limited to allow people to acquire the foods they need, special emphasis must be laid on measures to make more food available within their means.

Knowledge of existing diets and food patterns and of economic and social background is necessary in order to plan a satisfactory program of education in nutrition. The first part of this report is concerned with these subjects. The organization of programs is con-



Familiar foods give a feeling of security.
Still photograph from the United Nations film *Battle for Bread*.

sidered, which raises the question of suitable personnel and their training and of appropriate teaching methods and materials. A number of examples are given of educational programs concerned with nutrition and allied subjects, drawn from different regions and from both highly developed and less developed countries. Some of these examples may contain ideas which can be adapted to different circumstances.

While education in nutrition is the main theme of the report, much of it relates to educational methods and techniques which are common to other kinds of extension work. Clearly, methods of teaching better nutrition are likely to be similar to methods of teaching

other subjects. Moreover, programs to improve nutrition must be integrated with programs in other fields which have a common aim—the well-being of the community. Further, it is important that all direct practical measures to improve nutrition, such as school feeding, should be supplemented by educational activities.

There is evidence that real improvement in diet and consequently in health can be effected by education. It is hoped that this report, which draws extensively on experience gained in various parts of the world, will be helpful to administrators concerned with the initiation and organization of programs which have better nutrition as an important objective, to workers, professional or voluntary, who are actively engaged in educational work in nutrition and allied fields, and to institutions in which such workers are trained.

The report discusses what may appear to be a somewhat wide range of subjects, varying from such complex problems as the academic training of nutrition workers to simple suggestions for the making of illustrative teaching materials, but this has been done largely in response to the wide variety of requests for information on nutrition education sent to FAO by workers even in high administrative positions in many countries. It is believed that officials with general responsibility for developing programs of education in nutrition may find the earlier and the final parts of the study of particular interest and that the intermediate parts dealing with methods and materials may be more useful to those who are actually carrying out the practical teaching of nutrition.

Chapter 1

FOOD PATTERNS AND NUTRITION

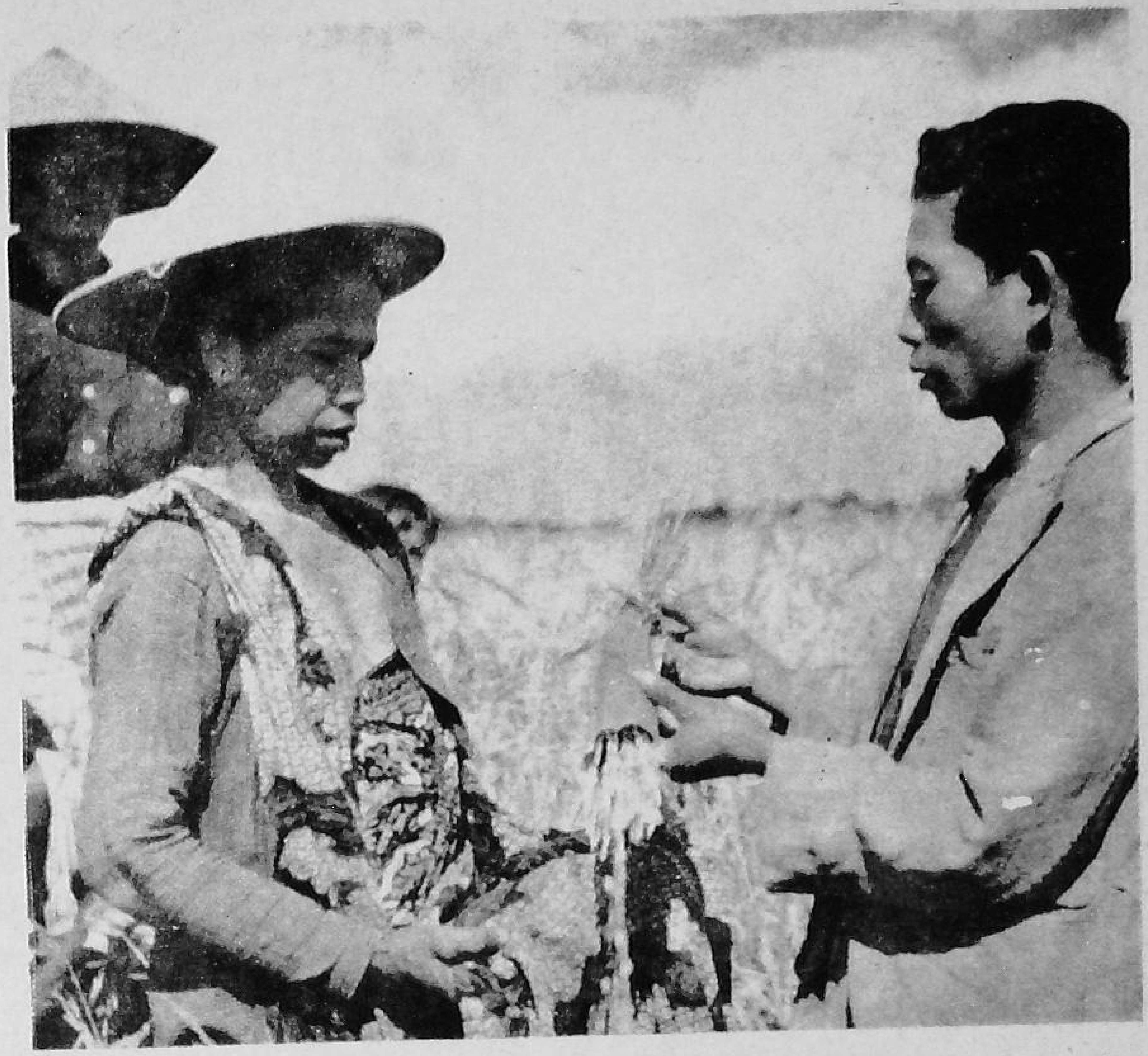
Knowledge of food patterns and customs, food supply and intake, and of nutritional status is needed to define the nutritional situation of a country or community. From this information it is possible to assess the need for an educational program and to obtain some indication of the lines it should follow.

Cultural Significance of Food

Because of its fundamental role in the struggle for existence, food has acquired a significance in human society, beyond that of providing nourishment for the body, which is reflected in many patterns of human behavior. Food may be closely associated with feelings of security and prestige. It has an important place in many religious observances. It is linked with countless superstitions and prejudices. Thus it can arouse many emotions—pleasure, envy, confidence, and even violent fanaticism. These relationships must be taken into account in attempting to alter food consumption.

Familiar foods give a feeling of security. Conversely, lack of an accustomed food that is associated with orderliness in daily life can cause anxiety and tension. For example, during the potato famine in Ireland in 1845 and 1846, it is said that the Irish people rejected the maize sent from America for their relief and even in some instances starved rather than eat this strange food. Much the same thing has happened when wheat and millet have been given to starving rice-eaters in Asia; and when the Allied Armies imported pea-soup powder into Italy after the Second World War, the hungry population ate it with great reluctance. In a major crisis, familiar food is even more important than in normal times.

Certain kinds of food have acquired a social significance which is quite unrelated to nutritional values. Thus, in many places white bread has more prestige than brown because it was originally more expensive and its consumption was largely restricted to the higher grades of society. For somewhat similar reasons white rice enjoys high social prestige in many rice-eating countries. The roast beef



Food and religion are closely associated. The priest in an Indonesian village hands a farmer's wife the first bunch of paddy which he has harvested ceremoniously in the *Mantenan* or "wedding of the crops" ceremony.

Photograph by courtesy of the United Nations Department of Public Information.

of England has been a symbol of prosperity to the English poor for many centuries, being regarded as food for landowners and rich men. Even in recent times, when meat has been strictly rationed, many British families save all their meat coupons to buy the much-reduced Sunday roast, and want of substantial meat meals is felt acutely even though the diet is adequate in terms of calories and nutrients. Such foods create a feeing of self-satisfaction and confidence that other equally nutritious foods do not provide. People who are insecure or who are striving to climb a social or economic ladder sometimes hold "foods for the poor" in contempt and try to get "foods for the rich." Thus a nutritionally desirable food that is stigmatized as

lowly can sometimes be popularized by first persuading well-to-do or well-known people to eat it. In the United Kingdom, for example, foods which are good and plentiful but considered humble, such as herring, have been sponsored by the Queen. Pictures of her eating herring and recipes prepared by the royal chef have appeared in the popular press.

Food can also have prestige value as a symbol of reward. Ice cream, candy, and desserts may be denied to "bad" children and given to "good" children. Again, foods can have prestige because they are considered "good for you." Often, however, there is little relation between nutritive value and prestige.

Dietary restrictions imposed by religion also play an important part in the food habits of many peoples. For example, Mohammedans may not eat pork, most Hindus will not eat beef, and some Hindu communities consume no food of animal origin except milk and milk products because their religion forbids the taking of life. Some Christian sects are also vegetarian, and others observe weekly fast days on which no meat is eaten. The Jewish religion forbids pork, shell fish, and various other foods and also prohibits the consumption of meat and dairy products at the same meal. Feeling upon such matters may run very deep. For example, one cause of the so-called Sepoy Mutiny in India (1857-58) was the alleged British practice of using animal fats to grease cartridges, which had to be bitten open by the Sepoys in loading their guns.

Through many generations of observance, religious restrictions have thus eliminated certain foods from the diet of some peoples. On the other hand, religious feasts make an important contribution to normally poor diets in many regions of the world. The Chinese, even when very poor, eat eggs and pork on the traditional festivals of the year and during special ceremonies on the occasion of births, deaths, and marriages. Poor Greek families eat lamb at Easter and on Sundays whenever possible, and this is sometimes the only meat which they obtain.

Superstitions and prejudices also influence food habits. In some countries certain foods are believed to have magic properties for good or evil. Eating them, it is believed, may influence the weather or the crops or may drastically affect sexual potency. Such deep-rooted superstitions are hard to alter. Some useful foods, also, are disdained as "food for animals" rather than for man. In parts of Great Britain, for example, certain green vegetables which used to be eaten by people are now considered "cattle fodder," and Northern Europeans in general have little appetite for maize, which

Attitudes towards food are developed early in life—Indochina.
Photograph by courtesy of the French Government.

tends to be regarded as "chicken feed." In other words there are many modern echoes of Dr. Samuel Johnson's scornful definition of oats—"a grain which in England is generally given to horses but in Scotland supports the people." In come countries, also, eating certain animals is felt to be equivalent to eating friends; thus, the horse is not eaten because it is an honored friend of man. An old Chinese peasant refused canned corned beef offered by the American Army because he regarded the ox as a familiar working companion. But in some parts of Asia, dogs are eaten, a practice which would be abhorrent to North Americans.

In many cultures, the preparation of food follows traditional methods dictated by religious beliefs, and these beliefs and practices must be understood in order to introduce new foods and new cooking

methods. Among Mohammedans in India, for example, meat must be killed according to the Halal method. This involves slitting the throat of the animal while holy verses are read, and allowing the animal to bleed to death. The Jewish religion also regulates the slaughter of animals. Hindu food must be prepared by Hindus and certain communities will eat only food which has not been touched by anyone outside the group.

The meal pattern of a group is important. For example, the meal may be based on one or two staple foods of vegetable origin, such as rice in South East Asia or maize and beans in Mexico, or it may be built around a "main course" in which an animal food is an important ingredient, as in Western Europe and North America. The number of meals eaten daily also differs from place to place. Information on these points gives an indication of the easiest place to introduce a new food into the existing pattern so that it is readily accepted. In the United States and the United Kingdom, for example, where the central part of a substantial dinner is usually some form of meat, people tend to think that a meatless meal is scarcely a meal at all. Educational programs in the United Kingdom during the war contained many suggestions for using other foods as meat substitutes.

The customary division of food within the family is of great significance. Does the family eat together, or does the man eat first and the women and children separately? Which members of the family obtain the largest share of the more nutritious foods or of foods available in time of shortage? Is it likely that supplementary food distributed to households, such as dried milk, will reach the members of the family who need it most, or must some other method be used to ensure that they receive it A diversity of cultural and economic factors influence these practices. It has been observed that in Scottish mining families the meat ration for the family is sometimes consumed almost entirely by the father, while the children and the mother eat unrationed substitutes. Much the same division of available supplies was observed among U.S. mining families during the depression. The practice results from a deep-rooted conviction that the wage-earner must have meat to keep him strong and able to work. Children may come next in order of priority, and, finally, the mother. Among other groups, the order may be a different one.

Attitudes toward a particular food vary widely from culture to culture. This is particularly true of milk.[1] In many parts of the world, milk is considered of primary importance for its health-giving

[1] National Research Council, U.S.A., Committee on Food Habits, *The Role of Milk in the American Culture*, Washington, D.C. (unpublished, circa 1943).

qualities, especially for children, invalids, and old people. Liquid milk is usually believed to be more beneficial than powdered milk or other forms of milk such as cheese, which may be considered as "equivalents" of foods other than milk. Cheese, for example, is often regarded as a meat substitute. In most countries milk is rightly regarded as a food of the utmost importance for children, but the idea may be carried to extremes. Parents may consider it a food of almost magical value and think that their children will rapidly weaken and die unless they consume it in prodigious quantities daily. Mention may also be made of the strange notion that it is dangerous to mix milk with certain other foods such as fruits and fish.

Some American Indian tribes consider milk disgusting. And it has been said that they may even refuse beef "because it tastes like milk." However, a few northern tribes especially prize the udder of the milking-giving doe caribou, which is regarded as a strength-giving food and permitted only to men. In recent years, a particular brand of canned milk has been recommended to the Papago Indians in Arizona, U.S.A., as a substitute food for babies when breast feeding

A tortilla maker in Villa de Guadalupe, Mexico. Tortillas made in the traditional manner from maize softened with lime are a rich source of calcium.

Photograph by Franklin E. Kozik.

is impossible. As a result, it is the proprietary product, and not cow's milk itself which is considered the appropriate food for babies, and the product is not associated in their minds with cow's milk. The use of a trade name in an educational program is often unfortunate, for people learn to have faith in a particular form or brand of food and may not realize that others can be used in its place if it is not available.

In parts of Southern Europe, fluid milk is rarely used except in coffee or by small children. Cheese, on the other hand, is a popular food. Dried milk distributed by UNRRA was accepted by Italian school children when it was mixed with water to form a spread resembling cheese, although reconstituted milk was refused. In most parts of Western and Northern Europe, fluid milk, cream, butter, and cheese are common dietary articles, but there are some places in which milk is believed to be a dangerous food. This belief is no doubt based on the fact that local milk supplies are unhygienic, but the feeling may be carried over even to uncontaminated, reconstituted dried milk.

Milk, in common with many other foods, is often the subject of religious and social restrictions. Romanians do not consume milk or butter during long fasting periods. In orthodox Judaism, the sale, cooking, and consumption of milk are strictly regulated. Among some African tribes, women may not do the milking; among others, the milk of various animals is prohibited to certain age and sex groups. Among the Kababish, men drink only camel's milk, women cow's milk, and children goat's milk. In other tribes, such as the Banyankole of the Lake Region, milk is reserved for the "nobles." In contrast to the Western practice of giving an extra share of milk to pregnant women, the Masai of the Lake Region of Africa dilute the milk these women receive.

Milk is popular in some parts of Asia, but in Japan and Burma and among the more conservative groups in China, milk and milk products are considered undesirable food for adults. This is probably because people have become unaccustomed to consuming these foods during centuries of shortage and because any milk available is of poor quality and grossly contaminated. Although some Hindus will not touch animal foods, milk is an exception; it is not only accepted but is highly prized.

Anyone attempting, therefore, to increase a country's consumption of milk, or any other food, must study the relevant attitudes and practices of the people and plan an educational campaign in the light of that knowledge. It is obvious that a set of dietary rules drawn up in one country may be entirely unsuitable for use in another. Persons

sent to developed countries for training as nutritionists have often, on their return home, attemped to apply what they have learned without adapting it to local conditions. For example, a commonly used technique in the United States of America is to classify foods into seven basic groups according to their nutrient content and to recommend that certain quantities of foods from each group be eaten every day.[2] In many countries this approach, which involves a choice from a wide range of foods and the consumption of a large quantity of milk, is quite unsuitable. A more successful approach may be to teach how the nutrient content of the staple foods can be improved and how the diet can be effectively supplemented by a few other foods of high nutritive value.

Altering Food Habits

Food habits are not static. Though many obstacles stand in the way of modifying them, they are constantly changing in a changing world.

In general, diet improves with improved economic status. This has been pointed out by many workers in the field of nutrition. When money is plentiful, people tend to buy more of the expensive foods of high nutritive value, especially animal foods. In countries where refined foods have high prestige, however, increased income may mean a change from high extraction to low extraction cereals, thereby reducing to some extent the amount of minerals and vitamins of the B group in the diet. Moreover, when economic conditions are improving, better nutrition may at first be sacrificed for other things associated with higher living standards, such as radios, furniture, or automobiles.

Numerous examples could be given of a gradual change in dietary patterns caused by the introduction of new processed foods and new cooking and packaging methods. Dietary changes also result from alterations in the structure of society, as for example the increasing shortage of domestic servants. Yet, a campaign which tries to alter existing customs abruptly often meets with an unfavorable response. Margaret Read of the Colonial Department, University of London, Institute of Education, tells of an old woman in a Central African village, who said to her, "You Europeans think you have everything to teach us. You tell us we eat the wrong food, treat our babies the wrong way, give our sick people the wrong medicine. You

[2] Green and yellow vegetables; oranges, grapefruit, tomatoes, and salads; potatoes and other vegetables and fruits; milk and milk products; meat, poultry, fish, or eggs; bread, flour, and cereals; butter and fortified margarine.

Indonesian street market. Examination of the chain of food supply from producer to consumer usually indicates a point where nutrition education might be effective.

Photograph by courtesy of United Nations Department of Public Information.

are always telling us we are wrong. Yet, if we had always done the wrong things we should be dead. And you see we are not."

Resistance to change may sometimes be justified, for efforts to alter established food habits can do more harm than good unless their implications are fully understood. It is dangerous, for example, to teach people to drink milk and eat raw salads when the available supply is contaminated. Again, in Central America, the traditional method of preparing maizé by soaking it in lime water adds calcium to the diet; in such circumstances the popularization of modern maize preparations would be nutritionally undesirable. Well-meaning people have attempted to reduce the consumption of indigenous fermented drinks such as pulque in Central America and kaffir corn beer in Africa, but this could endanger supplies of C and B vitamins.

A "mixture" of diets associated with different cultures may be

disastrous, for the bad points of each may be adopted. A recent survey of nutrition among Indians in Northern Manitoba, Canada, for example, shows that their physical condition has deteriorated markedly since their consumption has been changed from "local" to "store" food.[3] Refined foods purchased from the trading station have taken the place of many indigenous foods, but many of the more nutritious foods eaten by the white population of Canada are not available to the Indians because they cannot afford to buy them. Tooth deterioration resulting from somewhat similar causes has been observed also among the Maoris in New Zealand.[4] Emigrants from Central Europe to the United States in the nineteenth century often adopted the habit of eating white bread instead of dark because of its prestige as rich folks' food in their home countries. In the diet which they adopted in their new environment, however, there was no compensatory source of B vitamins.

With the rapid spread of modern civilization during the present century, many peoples are in a transitional stage between old and new cultures. Too rapid an advance can create grave difficulties. For example, a colonization scheme to relieve population pressure among American Indians has resulted in lifting them from their accustomed environment of "subsistence economy" and placing them suddenly on the same footing as the white population, dependent on stores for food and other consumer goods. The result is often debt and a worse diet than before.

The closer a program to effect changes in the lives of people is linked to established customs and habits, the more successful it is likely to be. Alexander and Dorothea Leighton,[5] working among the Navaho Indians in the United States, found them more willing to accept medical treatment from the Indian Service Hospital and to adopt more hygienic practices when the treatment resembled those used by the medicine men and when explanations and instructions were based on the beliefs and practices of the tribe. For example, in their native medical practice the Navahos rub the body with herbal concoctions and then drink what is left over; consequently, some hospitals found it advisable to provide a liniment for external application when an internal medication was being given.

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[3] P. E. Moore, H. D. Kruse, F. F. Tisdall, R. S. C. Corrigan. "Medical Survey of Nutrition among the Northern Manitoba Indians," *Canadian Medical Association Journal*, Vol. 54, 1946, pp. 223-233.

[4] H.B. Turbott, *The Maori People of Today*, Part VII: *Health and Social Welfare*, pp. 257-260. A survey issued under the auspices of the New Zealand Institute of International Affairs and the New Zealand Council for Educational Research, Whitcombe and Tombs, Ltd., New Zealand, 1940.

[5] *The Navaho Door*, Harvard University Press, Cambridge, Mass., U.S.A., 1944.

The Leightons suggest that Indians might be more willing to remain in hospital for treatment if the medicine men were asked to carry out some part of their curative ritual while modern treatment was being given by the white doctors. They suggest ways by which various diseases, among them malnutrition, can be described to the Indians in the terms that they will understand.

In effecting a change in established food habits, the psychological factors are equally important. Wherever possible, it is better

A nutritionist interviews a Chilean housewife.

to encourage the increased use of a known food of good nutritive value than to try to introduce new foods. For example, in Puerto Rico the use of nutritious foods which are already acceptable, such as *calabaza* (yellow squash), is advocated as part of the nutrition program.[a] Milk is usually taken as *café con leché* (coffee with a large percentage of hot milk). It has been found relatively easy to add dried milk to the Puerto Rican diet by encouraging its use in this form. If entirely new foods are to be popularized, the methods of preparation advocated should, as far as possible, be familiar or the foods should be incorporated into dishes already in common use.

Background Information for a Nutrition Program

In order to plan any specific educational program, the nutritionist must obtain the following types of information: What are the sources of food and how is it distributed in the community or country concerned; what types and quantities of food are normally available; is the food supply grown locally or brought from a distance; is it produced by individual family groups, by community groups, by commercial concerns, or is it derived from mixed sources; is it processed or preserved by families or by food industries; what facilities are there for transporting food; how is food distributed; if purchased, does it come from shops and markets or through barter with neighbors; is it part of the worker's wages; is it bought daily or in large quantities?

Careful consideration must also be given to the numerous factors influencing food habits discussed in the previous section. In summary, information on the following subjects is needed for this purpose:

(1) The general nature of the food pattern.

(2) Differences in food habits at various economic and social levels.

(3) Influence of food taboos and prejudices on the choice of food and methods of preparation.

(4) Methods of preparing food and facilities available for this.

(5) Possible sources of food contamination.

(6) Meal patterns, including seasonal variations and the ceremonial and social values of food.

(7) The procedures followed at meals. What family or community groups eat together?

(8) Food priorities within the family or group.

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[a] Lydia J. Roberts. *Nutrition Education in Puerto Rico*. FAO document N50/Co2/15, presented at the Nutrition Conference, Rio de Janeiro, June 1950.

(9) Customary procedures for feeding and weaning infants and for teaching children how and what they should eat.

(10) Attitudes toward specific foods.

All this background knowledge will help to indicate the points at which education is most needed and at which it can be most effectively applied.

Techniques of Studying Food Habits

The ways of studying food habits are many and varied. They include detailed surveys of food intake and of the meal patterns of groups and individuals; observations on group or individual behavior; questionnaires; interviews, either general or planned step by step; the study of traditional folklore such as proverbs, rituals, and stories; examination of advertising material; controlled attempts to alter food habits. It is better to use several methods at once, because single methods tend to give superficial results, although they may be useful for exploratory purposes. The cultural anthropologist can help the nutritionist to consider food habits in relation to the cultural background. Such help should always be sought if it is available.

A comprehensive study requiring a great deal of skilled and expensive investigation is usually beyond the reach of most nutrition workers who plan to carry out an educational campaign. Use should, of course, be made of any information previously collected. Quick methods of appraisal may, however, be needed when no previous work has been done and to supplement existing information. Such a method is that suggested by Kurt Lewin—a written questionnaire which can be applied to a group in thirty or forty minutes.[7] It is applicable only to literate groups, but people who cannot read may be asked the same questions in personal interviews. It can be used by teachers, social workers, or people of a similar educational standard. The test was originally used on children, since they were considered to be less likely than adults to conceal facts, but it can be given to a great variety of age groups and to any economic group. It consists of a series of questions, phrased indirectly and designed to throw light on what people eat, why they eat it, and who approves or disapproves of how they act about food. The questions are exemplified in Appendix I, together with suggestions for using the answers.

Answers to these questions show the relationship between foods

[7] National Research Council, U.S.A., Committee on Food Habits, *A Group Test for Determining the Anchorage Points of Food Habits: A Preliminary Report on a Study Directed by Kurt Lewin, Child Welfare Research Station, State University of Iowa,* Washington, D.C., June 1942 (unpublished).

eaten and the authorities who approve or disapprove of these foods, and the reasons for approval or disapproval. They also indicate the values associated with food in the culture concerned. While they cannot be tabulated on a punch card or give a scientifically accurate record of food consumption, they do provide what is perhaps more important for present purposes, a general picture of the dietary pattern and the attitudes towards food.

Another technique for obtaining information on food habits was used by the Food Habits Committee of the National Research Council, U.S.A. to supply background material for nutritionists and social workers concerned with wartime food problems.[8] The information collected included data on the historical and cultural background, living and working conditions, family life, educational levels, characteristic types of social organization, traditional methods of securing and handling food, attitudes towards food, the cooking and serving of meals, dietary patterns, and food consumption.

Since funds were insufficient to employ an extensive field staff, short methods had to be devised as a substitute for door-to-door interviews. The technique used to amass the necessary information for each group (people of Italian, Polish, Hungarian, and Czech origin and American Negroes) involved three types of approach:

(1) Through a volunteer collaborator with some training in the social sciences, chosen from each ethnic group under investigation. Each collaborator worked as a co-author with Natalie Joffe, technical assistant to the Committee on Food Habits, in preparing a report on his own group. The collaborators had wide contacts among the group from which they came, making it possible for them to obtain information on questions they themselves could not immediately answer.

(2) Through careful study of a wide range of printed material concerning the various groups, including works on food and diet, sociological studies, fiction, church and club magazines, and neighborhood magazines and newspapers.

(3) Through interviews with specialists familiar with the group and their manner of life. Valuable material was obtained from physicians, social workers, school teachers, newspaper editors, and others with sufficient education to enable them to view dietary and social practices critically and objectively.

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[8] Natalie F. Joffe, "Food Habits of Selected Subcultures in the United States," Bulletin No. 108, *The Problem of Changing Food Habits*, National Research Council, National Academy of Sciences, Washington, D.C., October 1943, pp. 97-103.

A more detailed and accurate knowledge of food habits and dietaries in a population can be obtained through the home interview procedure, which was used by Roberts and Stefani in their study of living conditions among Puerto Rican families.[9] For the dietary section of this study, an interview schedule was prepared covering all aspects of food supply, purchases, meals, and customs. A sample of 1,000 families was then obtained by statistical procedures, and trained investigators went to the homes and obtained the information personally from the housewife or other qualified person. The first step was to obtain a record of the foods prepared for all meals during the past 24 hours, with quantities so far as the respondent was able to give them. Following this, detailed questions were asked about every main type of food—milk, meat, eggs, vegetables, fruits, cereals, etc.—questions concerning frequency of purchase and use, amounts consumed, ways of preparation, likes and dislikes, superstitions regarding the various foods, and other pertinent subjects. The data were then tabulated to show consumption of each of

[9] Lydia J. Roberts and Rosa Luisa Stefani, *Patterns of Living in Puerto Rican Families*, University of Puerto Rico, Río Piedras, 1949.

A member of an Australian nutritional survey team weighs all foods that go into the cooking pot.

Photograph by courtesy of the Australian Department of Information.

the basic foods and other facts of importance. Since the data were obtained on a valid sample, the findings could be assumed to be reasonably typical of Puerto Rican families as a whole. This method is naturally somewhat costly and can be employed only when sufficient funds and qualified workers are available.

The information gathered by this technique can give a useful general picture of what people eat, what they feel about food, what characteristics of their diets and food habits are good, and where the weaknesses lie. It can indicate the lines along which an educational program to improve food conditions can proceed without too much local resistance.

Incentives for Improvement

The choice of appeals is of great importance. People do not change habits without an incentive. Through the investigation of food habits and cultural background, those organizing the program should be able to determine the appeals most likely to be effective in bringing about improvements.

Direct questioning of people may not throw a clear light on incentives. It may even provoke misleading responses. The people questioned may give face-saving answers or answers which they think will please the interrogator; they may say things which they only half believe. A wide knowledge of the culture of the people helps the nutrition worker to discover the real aims and to pick those which are strongest. In a study of attitudes toward nutritional education made on 948 women and 364 men in 16 cities in the U.S.A. in 1944, the principal motive for wanting and using such information was found to be "health for the family."[10] It was also found, however, that a number of the people interviewed considered a nutritionally adequate diet to be a diet which one "should eat" but does not enjoy. Many stated that they did not follow rules in choosing their diet; the use of the term "rules" meant to them limitations and restrictions. When the association with unpleasant duty exists, the moral emphasis should be shifted from what one "should do" to what will enable one to reach certain generally accepted goals, such as family health.

In this same study, it was found that some people felt good nutrition to be unnecessary for adults. A possible way of changing this attitude is to teach nutrition on an adult intellectual plane, with emphasis on principles rather than on fixed facts. It was noted that

[10] Patricia Woodward, *Attitudes Towards Further Information About Nutrition*, National Research Council, U.S.A., Committee on Food Habits, Washington, D.C., August 1944 (unpublished).

the findings of scientific research seemed to appeal particularly to men; while food choice and preparation are a "woman's job," science is regarded as an appropriate masculine interest.

In most communities, increased prosperity is a basic aim, and better working capacity through better health can be used as an incentive. In French Canada, better health leading to harmony in the home has been suggested as a suitable appeal for women.

Nutritional Value of the Diet

Social and economic background and psychological attitudes towards food are of great importance; but, to plan an education program intelligently, some quantitative information about food consumption and the nutrient value of existing diets is also necessary. This information can be provided by the study of food statistics and by dietary and nutritional surveys.

Food consumption. Statistics on the total food supply in an area, if available, will give some general indication of gross shortages and deficiencies. Even if there are no satisfactory statistics, an expert familiar with the country can often roughly estimate supplies of different commodities. But data on over-all supplies do not show differences in distribution. They only indicate inadequacies which would exist even if distribution were equitable. For example, in many countries the available quantity of foods providing animal protein is so small that the strictest rationing would allot an almost negligible amount to each person.

However, distribution is rarely equitable. Even when the total supply of food is plentiful, there is no guarantee of an adequate diet for each family. To discover the deficiencies of family diets, surveys are needed. The most suitable type of survey differs with circumstances. Norris has discussed the various types in *Dietary Surveys, Their Technique and Interpretation.*[11] If no survey is possible before a program is started, a nutritionist familiar with the area can often provide information on the more obvious shortages. It is desirable, however, to carry out a survey as early as possible so that more accurate information is available to guide the program.

A common difficulty in surveying less developed groups is lack of data on the nutrient content of local foodstuffs. Foreign food tables may be inadequate, as the nutrient content of similar species

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[11] Food and Agriculture Organization of the United Nations. *Dietary Surveys, Their Techniques and Interpretation.* FAO Nutrition Study No. 4. Washington, D.C., December 1949.

of food plants may vary somewhat from country to country and such tables often do not cover local foods of importance. Again, assessing the quality of a diet by comparing it in terms of foods with diets which are considered nutritionally appropriate in other countries may be misleading: a diet may differ widely from the type which a nutritionist trained in another country has been taught to consider adequate and yet may have excellent nutritive value. For example, Cravioto and his colleagues have reported that many foods in Mexico are richer in specific nutrients than foods in the United States and that the nutrition program in Mexico should be based upon the nutrient content of Mexican foods rather than on U.S. patterns.[12] If adequate data do not already exist, analysis of local foods and investigation of the effects of local methods of preparation on their nutrient value should be arranged as soon as possible.

Nutritional status. Information is also needed on nutritional status—i.e., on whether people are well nourished or show signs of dietary deficiences. This can be correlated with data on food consumption and habits to give a rounded picture of the effect of the present diet on the health of the people. Good nutritional status is reflected in good growth and bone development, healthy bodies, alertness, vigor, and stamina. Poor nutrition is reflected in high infant mortality, low expectation of life, and often in deficiency diseases. Extreme cases of poor nutrition are easy to detect, but less severe cases can often be discovered only by careful clinical, physiological, and biochemical investigations. Nutritional status may therefore have to be assessed by a survey which includes such investigations by experts.

If signs of poor nutrition are found, the nutritionist must discover what specific deficiences in the diet are causing them. In certain circumstances, poor nutrition may result from failure to benefit fully from food consumed because of parasitic diseases such as malaria ancylostomiasis (hookworm) as well as dysenteries. When this is so, attention must be given to the elimination or reduction of parasites, and the improvement of sanitation as part of the campaign to improve nutrition.

Whenever possible, nutritional surveys should be repeated at intervals, to guide the educational program and to evaluate its results.

Drawing Conclusions

When all the evidence has been examined, a plan of campaign

[12] René Cravioto B., Ernest E. Lockhart, Richmond K. Anderson, Francisco de P. Miranda, and Robert S. Harris, "Composition of Typical Mexican Foods," *Journal of Nutrition*, Vol. 29, No. 5 (May 1945).

Greek nutritionists and the FAO nutrition consultant to the Greek Government discuss a nutrition program for Greece.
Photograph by courtesy of the United Nations Department of Public Information.

must be drawn up. Among the questions to be considered are the following: Can improvements be brought about by adding one or two foods or by altering the method of processing some food commodity? Should education be directed mainly toward increased supplies or toward the better use of existing supplies? Would these changes be possible without disrupting the social pattern of the community? Are they feasible within the economic limitations of the country or community? Can the necessary foods be grown locally? Are tools available for producing them, or can they be made? If a food cannot be grown locally, can it be imported cheaply

enough for everyone to buy? If not, can special price arrangements be made for the poorer people? Are there facilities for its preparation?

It is worse than useless to urge people to use a food if they cannot obtain or produce it. Thus a "drink more milk" campaign in countries without an adequate dairy industry is likely to be received with derision. Instructors who suggest the use of any commodity must make sure that it can be obtained in the neighborhood or produced by the people themselves. When instructions are impossible to follow, there is frustration among those trying to co-operate and contempt for the intelligence of the adviser.

In most places, poor nutrition generally results from multiple causes, of which shortages of certain kinds of foods, low economic status, and lack of knowledge are the most important. The program, to be effective, must be closely associated with programs to improve agriculture, food distribution, and economic conditions. It is often an important task to convince people of the need for such a broad integrated attack.

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Chapter 2

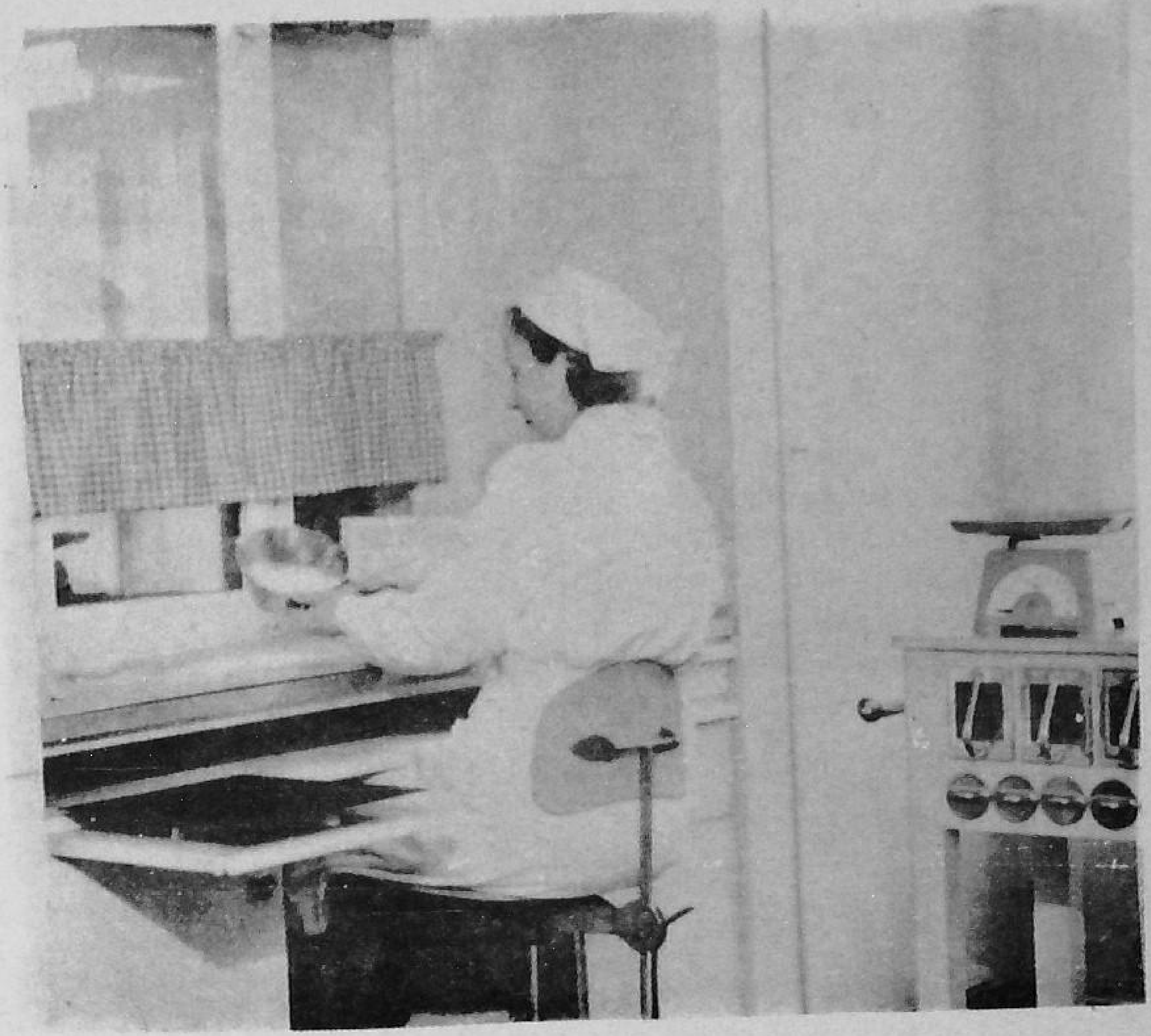
ORGANIZING EDUCATIONAL PROGRAMS IN NUTRITION

GETTING STARTED

The best way to start a nutrition education program and the lines along which it can expand differ from country to country and even from area to area within a country. The degree of social and industrial development is a determining factor. At the one extreme there is modern civilization with its advanced technology; at the other, the primitive community. Most countries, however, fall somewhere between these extremes. In the more highly developed countries there are usually areas or population groups—often, but not necessarily, rural—with characteristics closely resembling those of less developed regions. On the other hand, highly organized urban centers are often found in underdeveloped countries.

In a highly developed country there are usually advisory services spreading out from the central government. A ministry or department of health may branch into a network of county health departments, urban and neighborhood services, and rural and village services. Educational material issued by the central department can flow quickly through these channels and be passed on to the people through public health clinics, village nurses, and other health workers. National departments of agriculture, social welfare, and education usually have similar channels reaching out to local agricultural advisers, welfare visitors, and schoolteachers. Many nongovernmental organizations such as the Red Cross, youth clubs, farmers' groups, women's organizations, and church societies have a similar structure.

Contact with large numbers of persons can be established and maintained through such agencies. Workers in the different services can be enlisted to teach nutrition, combining this with their other activities. In each neighborhood they can form a nucleus of personnel which, if given appropriate training in nutrition, can lead educa-



A model farm kitchen—Norway.
Photograph by courtesy of the Royal Norwegian Government, Domestic Science Information Office

tional campaigns. Money is available, also, to support social services, and good communications make it possible to reach the people even in remote rural areas. The bulk of the population can read, and information can be communicated through the written word. Modern farm and household tools, gas or electric cookers, refrigerators, radios, books, pamphlets, newspapers, etc., are generally available. These open up many opportunities for developing education in health and nutrition, and widen the range of subject matter that can be covered. But even in highly developed countries, the less advanced areas or groups may lack many of these facilities and, to educate such groups, other methods must be employed.

In less developed countries the personnel necessary to establish direct contact with the bulk of the people are usually not available. Technical officials often have large areas to cover and cannot launch and supervise educational campaigns in all parts of the country at

once. Resources may be lacking for road-building and for other public services and facilities. As many of the people cannot read, newspaper articles and pamphlets are of little value for educational purposes, and few families own radios. Poverty and lack of industrialization restrict the supply of farm and household equipment. In such circumstances the procedures taught and the teaching methods used must be suited to the simple manner of life and to the tools and utensils with which the people work.

But in the less developed regions there are often coherent social groups, such as tribal organizations, and it may be easier in some respects to organize community programs among such integrated

Annamite kitchen—Indochina.

Photograph by courtesy of the French Government.

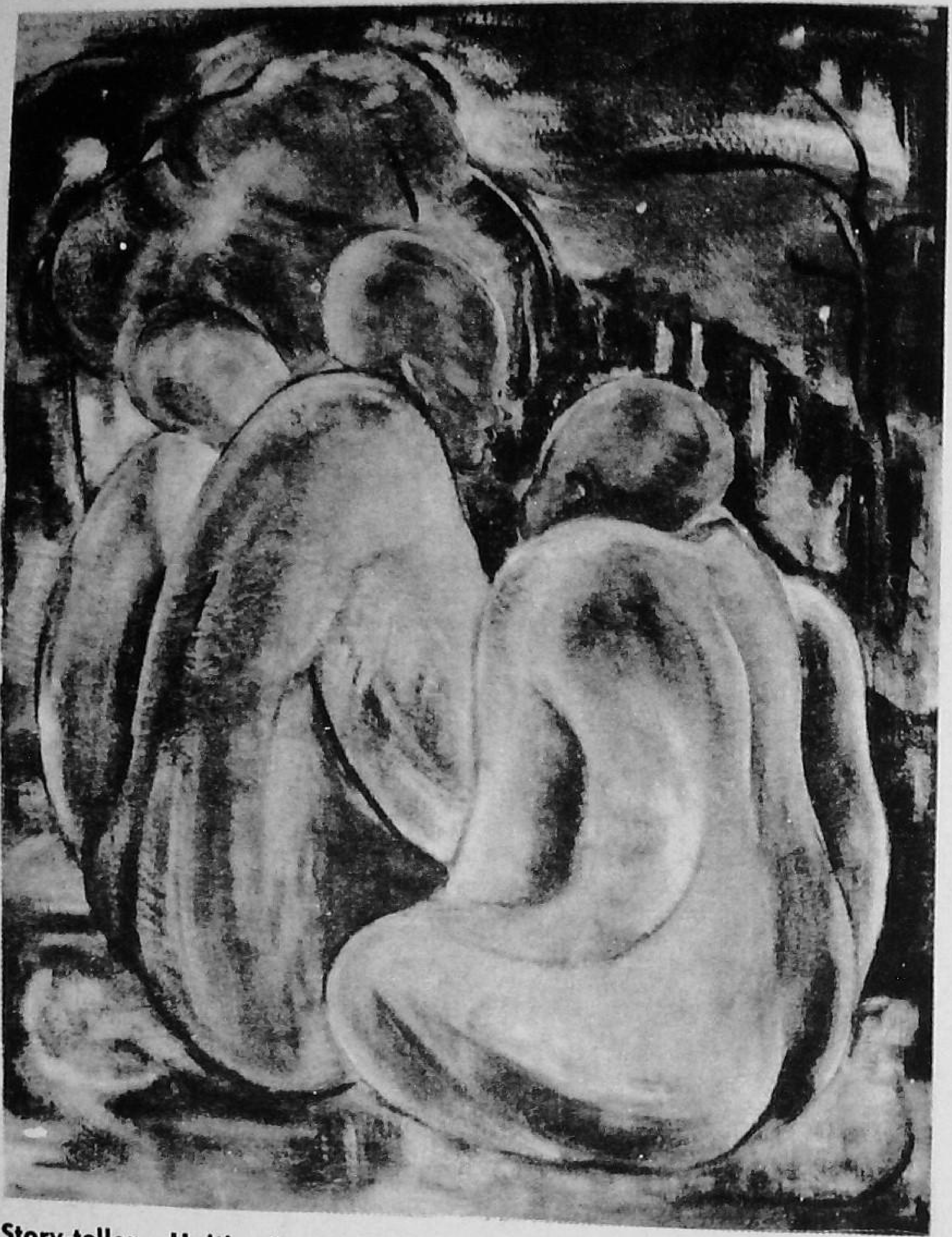
groups than among more sophisticated societies in which even close neighbors may not know each other. A suitable approach may be made through a comprehensive program of rural reconstruction in which nutrition is included. Such a program is more likely to be successful when it evolves from very small beginnings than when the starting point is an ambitious and complicated "blueprint" project. Yet it should fit into long-range plans. It should preferably be focused at first on a need that the people feel and express. When conditions are so bad that the people are unaware of any need and are resigned to their lot, educators must awaken their consciousness of needs and convince them that certain changes would benefit them.

Even though there is no obvious form of social structure, such as a tribal organization, a pattern of social relationships exists in every community. This must be studied and the program adapted to fit it. Every culture has its own system of communication. When people cannot read, information is passed from person to person at markets, fairs, funerals, and religious festivals, or when people meet at work or in the street or in washing their clothes in the stream. It may be shouted by a town crier or signaled by church bells or drums. Story-telling, mime, and drama are among the channels of communication. Others are meetings in the homes or with the village elders and pronouncements by chiefs, teachers, and religious leaders.

Community Leaders

Each society has its own ways of getting things done, of meeting difficulties, of procuring food. The role of the family and orders of precedence in the family and the community are established; some system of property rights and of maintaining law and order exists; and there is a consciousness of community opinion. The status of individuals and families is based on local values, whether the emphasis is on wealth, ownership of land, learning, reverence for age, or some other standard. To bring about any significant change in the established way of life, it is essential to understand this pattern, to be aware of the economic background of the community, and to apply this knowledge in selecting the most appropriate people as local leaders in educational campaigns.

Representatives from each section of the community should be consulted in planning a community program; the broader the representation, the better. The people at the top of the local status scale—local administrators, skilled workers, village leaders or elders—can be a strong influence in effecting change if they themselves can be influenced. They understand the minds and feelings of the people.



Story-teller—Haiti. In many places information travels through the spoken rather than the written word.

Painting by Luce Turnier, from the collection of Kurt Wiener.

and the success of the program depends on their support; if they are antagonized instead of being drawn in, they can prevent the people being effectively reached. For people lower in the status scale, co-operation in education programs can provide opportunities for acquiring prestige among their neighbors.

Starting an Educational Program

Education in nutrition can be initiated by workers in any of the professions concerned with health, education, social welfare, home economics, or agriculture, by nongovernmental organizations, or by persons with a social conscience who are interested in the well-being of the community. It is essential, however, that such different professional groups should be drawn together and persuaded to work towards a common aim. Whether the program starts in the community or in the central government, its sponsors must persuade other influential people of its worth. In the nation as a whole, these will include members of the government, heads of government agencies, heads of nongovernmental organizations, eminent citizens, etc. Locally, they may be members of the various professions, trade-union leaders, members of local governing bodies, teachers, religious leaders, village elders, or influential private persons.

Favorable public opinion must be created by people who are convinced of the need for action. To arouse enthusiasm, public meetings can be held or demonstrations given. While the specialist can provide information and assist in demonstrations, the main responsibility for gaining popular support for the campaign rests with leaders belonging to the country or community concerned. The people must feel that the program is their own.

It is best to start a program by adopting an objective toward which people are receptive and to extend it gradually as community support is assured. A successful program in one area is likely to arouse interest in neighboring areas.

Developing the Program

The next step is to develop a co-ordinated program with clearly defined aims. Further meetings may be necessary to discuss the part to be played by different groups. Here again the main responsibility should rest with the local sponsors, the expert acting as consultant.

A nutrition program must be guided by workers with a knowledge of the subject, to ensure that it is related to nutritional needs. In many countries, a training program to provide such workers may be necessary. Even in countries in which there are many nutrition specialists, local training programs are usually needed, for the specialists cannot reach everybody in every community (see Chapter IV).

The area to be covered should be small enough to be handled by the experts available for supervising the program. The cost of an operation begun on a small scale can be kept under strict control.

As interest grows, as experience is gained and successes are achieved, and as more trained personnel become available, the program can be expanded. Continuing expert supervision is needed to keep the participating communities working actively towards self-improvement; they must not be allowed to relapse into inactivity, for work started and then stopped is hard to begin again. The field program must be developed slowly on a solid foundation. The new habits and methods must be properly established, and this takes time.

NATIONAL PROGRAMS

An educational program in nutrition is concerned with the production, consumption, purchase, preservation, and preparation of food. In scope, it may embrace phases of physiology, medicine, agriculture, home economics, psychology, sociology, and cultural anthropology, and assistance from workers with special knowledge in these and other fields is desirable.

The easiest way to start a national nutrition program may be to link the teaching with an existing program or activity—e.g., maternal and child welfare services, social welfare centers, rationing programs—and to progress outward from this nucleus. The efforts of participating services must be co-ordinated at all stages.

Education in nutrition has been developed in different ways in different countries. Usually one particular organization or service has been responsible for initiating and carrying out the program, while others have collaborated with it. Sometimes government officials have taken the first step in arousing public interest. In other instances, governments have acted in response to the pressure of public opinion, or the main initiative has come from influential private organization. In Canada, public opinion had much to do with the creation in 1941 of official nutrition services concerned, among other things, with the education of the people. Public interest in the subject had been aroused by physicians, university professors, and others; it was intensified by the war and by rationing. In postwar Greece, after UNRRA ceased to operate, the Government was faced with urgent food and nutrition problems, and FAO was invited send a nutritionist to help organize nutrition services. These services are now functioning in association with the Ministries of Agriculture, Food, Health, Welfare, and Co-ordination. The organizing nutrition-

ist was attached to the Ministry of Co-ordination, but it is planned to attach the nutrition services, on a permanent basis, to the Ministry of Agriculture. In Canada, the official nutrition department is part of the Ministry of National Health and Welfare; the same arrangement is found in a number of other countries.

In the United States, rural educational work in nutrition has been carried out primarily by the Agricultural Extension Service, but the Federal Security Agency, voluntary organizations such as the Red Cross, and commercial companies have also been very active. During the Second World War the nutrition work of these agencies was co-ordinated into a national program by the formation of a co-ordinating committee under the U.S. Department of Agriculture. In the United Kingdom, the Ministry of Food, collaborating with the Ministries of Health, Education, and Agriculture, was responsible for the expansion of food education during the war years. In Denmark much teaching has been done through the folk schools, public schools, and extension schools; in the Netherlands through women's organizations; in Guatemala through rural schools. In Jamaica, a contribution from the United Fruit Company made it possible to start Jamaica Welfare, an organization which, first as a private company and later as an official service, has grown into a vigorous country-wide endeavor in which co-operatives play an important part. In Czechoslovakia, the housewives' association and the trade unions spread information supplied by the National Institute of Health, the Ministry of Health, and the Ministry of Food.[1]

Advantages of Various Approaches

Through the medical profession. Public health departments are in an advantageous position to sponsor and develop nutrition education. Doctors and nurses have a high prestige in the community, and they are in contact with large numbers of people through clinics, visiting nursing services, and maternity and child welfare centers. Physicians are usually aware of the need for popular education in nutrition and for changes in dietary habits, but they require the help of teachers, agricultural agents, and others to develop a program satisfactorily on a wide scale.

Through agricultural and home improvement services. In some countries, extension workers in agriculture and home economics have earned respect and prestige among farm families. Living and working among the people, they know their problems. They have also been trained in informal teaching techniques. Their work is a

[1] Examples of different types of programs are described more fully in Chapter VII.

direct link between the research worker and the population. It helps rural people to produce the maximum amount of food while maintaining the productivity of the land, to improve their health, and to raise their standard of living. Improvement in nutrition often depends to a large extent on the realization of these aims. It is natural and rational that nutrition education should be included in extension activities of this nature, and workers in these fields may well initiate it, with the assistance and guidance of physicians and nutritionists.

Special reference may perhaps be made to the possibility of working through youth organizations, such as 4-H clubs and young farmers' clubs, which have been established in certain countries by agricultural and home economics organizations.

Through the schools. It is a sound principle to direct the teaching first toward the groups most susceptible to change. School children form such a group, for their habits and prejudices are less firmly established than those of adults. At this age desirable attitudes toward food and good food habits can be induced through formal and informal teaching and through practical programs such as the school lunch. The schools therefore provide another suitable starting point for teaching nutrition.

Children, however, forget easily unless what they have learned becomes part of their daily lives. As they spend more time with their parents than with their teachers, the parents' influence may be more lasting. Parents may be influenced through their children, but more often they may prevent the child from adopting habits learned at school, unless they themselves can be reached. Adults should therefore be taught simultaneously with children. Extension services or parent-teacher associations can help to organize the education of parents.

Through commercial companies. Firms that produce foods of high nutritive value or household equipment such as cooking stoves may devote some funds and publicity facilities to the improvement of nutrition. Few of them, however, can do a comprehensive job of nutrition education by themselves, and their approach may often be influenced by self-interest. But companies that are willing to cooperate in a national or community program can often make a valuable contribution, and their help should be sought whenever this seems desirable.

Suggestions for Organizing a National Program

Workers in the field have expressed the need for a list of steps which may be taken in organizing a national program. Such a list is

suggested below for (1) moderately and highly developed countries and (2) less developed countries. In practice, of course, all these steps may not be necessary and the same sequence may not be precisely followed. Other steps, not referred to here, may also have to be included.

In moderately or highly developed countries

(1) At least one influential person or group in the country must be convinced that the program is needed, and must be determined to start it. The sponsors may belong to any profession relating to human welfare or may be other influential private citizens.

(2) If the sponsor or sponsors are not nutritionists, the co-operation of a nutrition specialist or of some organization directly concerned with nutrition will be needed.

(3) Government backing must be sought if a national program is to be developed successfully. A demonstration in one area may be needed before such support is obtained.

(4) An office and some clerical help must be found. One of the interested agencies may be able to provide them.

(5) If no national nutrition committee already exists, a central committee can be formed. This may include representatives from all government agencies that can assist in the program and from nongovernmental bodies such as co-operatives and women's organizations.

(6) The committee should study the results of any surveys—dietary, health, social, etc.—which have been made in the area. The information obtained can be supplemented by consultation with workers in various fields familiar with the area and its people. In the light of this preliminary study the committee can define the objectives of the program and work out a plan of campaign.

(7) Special attention must be given to the following:

(a) The availability of experts in various phases of the program.

(b) The training of additional personnel.

(c) Finance. Funds are needed for training, travel, and teaching equipment.

(d) The community or communities selected for the initial activity and the extent of the program.

These must be considered in relation to the funds and personnel available.

(8) A useful next step is to organize a workshop or training camp at which members of the various professional groups are brought together for a period of several weeks. Here they can be taught some basic facts about nutrition and discuss the aims of the program, its various stages, and the techniques for developing it in their own parts of the country (see Chapter III).

(9) If a nation-wide campaign is planned, the central committee can divide the country into districts. People who have attended the training camp can organize in their own districts a local committee composed of suitable persons. The program can be launched in each district after a one-day conference has been held, to which teachers, extension workers, public health workers, influential citizens, etc., are invited.

(10) From time to time the central committee should review the progress that has been made and re-examine the program to ensure that the objectives are feasible and realistic. Appropriate nutrition and family living studies may have to be made at suitable intervals for these purposes.

(11) The central committee must act as a co-ordinating link between the central offices of co-operating agencies.

(12) As the program expands, more workships and personnel training schemes will be necessary to supply more trained personnel.

In less developed countries.—In less developed countries, where central agencies do not have personnel stationed in each district, the start will probably have to be made in one or two communities and the program extended from these nuclei. The following stages are suggested:

(1) An originating organization or individual is necessary. A nutrition expert is needed for guidance and evaluation.

(2) The good will and support of the government should be sought.

(3) A study of conditions in the country will probably suggest specific objectives for the program and the most suitable locality in which to start. If a particular village

or other community has shown an interest in an educational program, this will probably be a good place at which to begin.

(4) Those initiating the program should talk with local leaders, teachers, and other influential people to gain an insight into the life and customs of the district and an understanding of the local problems.

(5) The co-operation of local leaders is needed, and winning their support and sympathy may take time.

(6) Suitable local workers must be found and given some training. Willing and enterprising men and women can be given instruction in relevant subject matter and teaching techniques which will qualify them for direct work with families. (For training methods, see Chapter III.) Arrangements must be made to provide the housing and staffing needed for such training, and money must be found to pay for it.

(7) During the training period, the responsibilities of workers and the first steps to be taken in developing the program in the village or other community must be decided. Initial aims should not be too ambitious—they can probably, with advantage, be limited to one or two improvements.

(8) The success of the program should be evaluated from time to time by such criteria as the percentage of people in the community taking an active part and concrete evidence of improved health and welfare and better food supply (see Chapter VI).

(9) People from neighboring communities should be encouraged to visit demonstrations, exhibitions, and community projects, since this will help in extending the program gradually throughout the country. Too rapid extension of the program in the absence of trained leaders and advisers may, however, be undesirable.

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Chapter 3

TRAINING NUTRITION WORKERS

PROFESSIONAL TRAINING

Training in nutrition can be classified broadly as professional training, training in nutrition for workers in other professions (including academic training and in-service training for staff members of such a program), and training for local leaders.

Frequent reference has been made in earlier chapters to the need for nutrition specialists to guide educational programs. The training of such specialists is therefore a subject of basic importance to this study. It is probable, however, that a detailed account of the curricula of academic training courses in nutrition and the qualifications of nutritionists and dietitians would not be of direct interest to most readers. Moreover, it would perhaps be inappropriate, in a study of this type, to deal with these subjects in full detail. Accordingly only a number of questions which have a practical bearing on the development of educational programs are considered in the present chapter. In Appendix II more information is provided about curricula, etc., and descriptions are given of training procedures in a few countries.

In a few countries, satisfactory facilities are available for training nutrition specialists who can take the lead in developing practical programs. In most countries, however, these facilities do not at present exist. There is a shortage of instructors, and the professions of nutritionist and dietitian are frequently so new that they have not acquired sufficient prestige to ensure the allocation of funds for establishing training courses. Moreover, there are often few opportunities of employment for academically trained nutrition workers, and the salaries paid them are not high enough to attract the best students to the profession. Graduates in nutrition cannot be employed to full advantage unless there is an integrated national nutrition program. Therefore, three important aims must be realized in many countries: (1) to provide professional training facilities,

(2) to raise the status of nutritionists and dietitians, and (3) to provide opportunities for them when they are trained.

Additional difficulties have arisen in many countries as a result of the Second World War, which scattered the staffs of established institutions and made it impossible to maintain laboratories and libraries. To meet these difficulties, countries which did not suffer war devastation have been generous in offering training in their institutions for workers from abroad. International agencies such as UNRRA, UNICEF, and WHO have also played an important part in arranging and financing such training for students from the war-devastated areas.

A further problem in many countries is the lack of suitable textbooks and reference books in the national or local language. Textbooks should preferably be written for use in a specific country, but translations of foreign literature can often be of considerable value if they are modified to meet local conditions.

The particular aspects of nutritional science that need emphasis in the training of professional nutritionists and the methods that will be most effective in applying nutritional knowledge differ from

Research workers in the Department of Nutrition at Harvard University's School of Public Health.

Photograph by courtesy of Frederick Stare

place to place. Training curricula suited to one country, therefore, may be unsuitable in others, at least without adjustment to different conditions. This fact has obvious significance for students trained abroad. Sometimes such students are taught only in terms of conditions in the country where they are receiving their training. When they return home, it may be impossible for them to apply what they have learned and the result will be frustration and failure. Instructors in training schools should bear this possibility in mind. Throughout the course students should be encouraged to consider how the knowledge they are gaining can be applied to problems in their own country.

All academic training in nutrition must include instruction in the sciences on which nutrition is based—chemistry, biochemistry, biology, and physiology. The depth of knowledge required and the emphasis that will be placed on various aspects of these subjects will depend upon the type of work for which the trainees are being prepared. Obviously, a laboratory research worker requires a deeper knowledge of the basic sciences than a nutritionist or dietitian in public health or community work, but these latter cannot apply the results of research without an understanding of the scientific background and some knowledge of the experimental methods used. In addition to the basic sciences, some knowledge of the social sciences is necessary to all workers in nutrition if they are to understand the needs and problems of the people.

TRAINING IN NUTRITION FOR WORKERS IN OTHER PROFESSIONS

Academic Training

With suitable instruction in nutrition, workers in other professions and occupations—for example, general medical practitioners, public health workers, nurses, caterers, welfare officers, teachers, administrators, agriculturists, and missionaries—can play an important part in programs to improve nutrition. They can, in fact, take the responsibility for developing such programs in their own localities when the number of nutrition specialists is inadequate for local work. In training for these professions, therefore, students should be given some knowledge of nutrition during their regular courses.

Suggestions for teaching nutrition to medical undergraduates

are given in Appendix III. Similar plans can be evolved for introducing this subject into the preparatory training of workers in other professions through courses in biology, physiology, sociology, economics, hygiene, or food preparation. This will eventually produce a body of workers who can apply knowledge of nutrition in the course of their regular professional activities. But this will take time. Meanwhile, workers in various professions who can assist in nutrition programs can be trained through seminars, short courses, or nutrition workshops. This type of in-service training is particularly important when the number of fully trained nutrition personnel available is small.

In-service nutrition training links instruction closely to everyday problems. A survey worker learns to conduct an interview with the assistance of the survey supervisor – Chile.

Long-Term, In-Service Training

When one or more specialists are available to supervise a nutrition program over a long period, it is possible to employ a staff with little or no specialized training in nutrition and to teach them while they work. This is a practical approach which links instruction closely to everyday problems. It can also provide training for workers who cannot afford full-time study.

An example of in-service training of this type can be found in Greece.[1] Since Greece had no community nutritionists, the FAO nutrition consultant who helped the government organize nutrition services (see page 30) trained a group of workers as "nutrition aides." These workers, all of whom were graduates in home economics, were given two months' instruction in community nutrition, combined with supervised work in the field. The subjects taught included:

(1) National food requirements and plans for meeting these through indigenous food production and imports.

(2) Feeding programs for vulnerable groups.

(3) Nutrition and social welfare, including the preparation of family food lists for use in establishing cost-of-living indices and in determining the point at which relief is needed.

(4) Nutrition education, including the education of the public through broadcasts, the press, school group meetings, and demonstrations.

(5) Food surveys and the collection of anthropometric data.

(6) The planning of institutional diets.

The nutrition aides were trained in the preparation of teaching material and in teaching techniques and were then sent to different rural areas to work. While working, they were closely supervised and, at intervals, attended training conferences of a few days' duration in Athens. At these conferences, various phases of the work were discussed by the group, with different members leading the discussion. Outside experts from government departments and colleges assisted, and arrangements were made for the aides to visit a school of agriculture, a margarine factory, and other places of special interest to nutrition workers. A nutrition exhibit prepared by the aides at one of these conferences was shown at the Harokopian School of Home Economics.

Another example of the in-service type of training is the

[1] Andramache Tsongas, Report to FAO Nutrition Division (unpublished, 1949).

training program for agricultural extension work at the Agricultural Research Station at Shih Chia Chuang, Shansi Province, China.[2] While this is largely concerned with improving local farming practices, similar teaching techniques could be used in training nutrition field workers. The program is organized as follows: a hundred boys are selected from neighboring villages on the basis of their intelligence, their interest in the welfare of the people, and their willingness to work for very little pay. They are given an intensive course in one agricultural subject, such as the control of a particular grain pest. They then return to the villages to help the farmers carry out a control campaign. After a few weeks, when this work is completed, they return to the research station for another week, during which they learn about another subject of timely practical importance. They then go back to the villages again to apply this knowledge. In the three winter months, when there is little activity on the farms, they attend the station for a longer course of training. During this time, each specialist spends a week instructing them in all the aspects of his particular subject. For example, one week is spent in studying

[2] Information given to FAO by Kay Beach of the American Friends Service Committee, 1949.

Bolivian rural teachers acquire practical knowledge in home economics at the Summer Institute, Santiago de Huata, March 1949.
Photograph by courtesy of the Pan American Union.

wheat in relation to soil, planting, varieties, pest control, nutritional value, and other aspects. In the spring the students return to the villages again to help the farmers. The longer winter training, which includes instruction in teaching techniques and experiments on new extension methods, is repeated for two years. It is hoped that at the end of three years these students will be well-trained leaders who can live in the villages and advise people on ways to raise their living standards and improve their nutrition.

Short Courses

Short courses are particularly useful as refreshers for workers who have had some training in nutrition or associated subjects, such as home economics or medicine.

The refresher courses given during the war by the Food Advice Headquarters Staff of the Ministry of Food in the United Kingdom are good examples of the type. The trainees were Food Advice Demonstrators from centers all over the country, rural domestic economy instructors, and demonstrators from the utility companies that were co-operating in the educational campaign of the Ministry of Food. Each course lasted one week, during which the participants attended lectures, followed by discussions, on the following subjects: nutrients and the nutrient content of foods; the requirements of vulnerable groups and the planning of family diets; methods and visual aids in teaching nutrition. Satisfactory diets based on available rations were worked out by the students for various age groups, and appropriate meals were cooked by them in the experimental kitchens. Problems encountered during their regular work were discussed, and one lesson period was devoted to practical suggestions on the techniques of public speaking. Visits were paid to various places of professional interest—for example, to a large factory canteen where a successful effort was being made to teach the workers better nutrition, and to a nutrition research laboratory.

Workshops

For giving some practical knowledge to workers who have had little previous training in nutrition, workshops are usually more suitable than direct courses of instruction. A workshop consists of a group of people with common interests and purposes, who work and if possible live together for a definite period while they consider methods of solving the various problems which face the different members.

Expert leaders are needed, and workers and leaders must prepare and carry out the program together. Training is centered on everyday problems which are submitted to the group by individual members. The program is informal and flexible, yet must be carefully planned if it is to achieve concrete results. It must be practical in its content so that members can take home plans of work and teaching aids for use in their own individual circumstances.

In order to allow time for discussion of the conclusions reached and of future plans, the training should cover at least two or three weeks. However, much the same technique may be used for meetings lasting only a few days or for weekly or monthly seminars extending over a long period.

Participants in a community nutrition workshop may be selected from various professions and from different communities. Every effort should be made to select people who will be in a position to develop practical programs throughout a particular area.

The members should be chosen well in advance so that they will have time to collect and forward information about their own experience and problems. They should be carefully briefed on the plans and purpose of the workshop and encouraged to participate in the preplanning. Information about local resources—social, cultural, human, and material—which might be of use to the workshop, or in the educational programs which will follow it, should be obtained in advance or at the start of the training. Those responsible for the workshop should draw on these resources for consultants and for a workshop staff.

Living and working quarters have to be arranged. These should include reading and reference facilities, secretarial services if possible, and the provision of materials needed for such activities as poster-making, cooking, and gardening demonstrations. Opportunities for applying practical methods in the local community should, if possible, be provided; but if this cannot be done, the workshop group should try these out among themselves.

The first meeting should be preplanned in detail. At this meeting, the group itself should decide on the problems to be attacked and the methods of work during the rest of the training period. While broad daily and weekly schedules should be planned beforehand, these should be approved by the group at the start of its work.

The director of the workshop is responsible for co-ordinating the work of the group and ensuring that it concentrates throughout on the aims agreed on at the outset. This must be done without

appearing to dictate or dominate. At the end of the training period the achievements of the group as a whole and the work of subgroups on special problems should be considered by all. This may occupy one or more days. Teaching plans and techniques worked out by members of the group can be presented in pictorial or dramatic form or in any other form which they think suitable. The success of the workshop can be measured only by the feasibility of the solutions which it proposes for the problems brought before it and by the effectiveness of the work of the participants after their return to their own occupations. Arrangements should be made to keep the interest of the group alive after they disperse and to follow the progress of its members. It is a good plan to make members of the group themselves responsible for these arrangements.

A nutrition workshop organized in 1943 by the Home Economics Department of the University of Puerto Rico[3] for leaders in agencies throughout the Island offers a good example of this kind of training. Its purpose was to introduce an educational program to increase and improve home food production and encourage better use of food and agricultural resources generally. The workshop was organized by Dr. Lydia Roberts, with the assistance of a nutritionist from the Puerto Rican Extension Service and two nutritionists from the United States. It was housed in the University of Puerto Rico, where space, secretarial help, cheap board and lodging, and the services of faculty members were available.

The criteria for selecting the sixty-six participants were as follows: interest in nutrition problems; ability to contribute to the program of the workshop; and opportunity for passing on the knowledge acquired in the workshop to fairly large groups of people. Those chosen included extension workers, workers from the Farm Security Administration, vocational home economics and agriculture teachers, elementary teachers, a superintendent and a principal of schools, a junior high school teacher, a nutritionist, a medical social worker, a district supervisor of nurses from the Department of Health, lunch supervisors, a housekeeping aide from the Works Program Administration, and lay leaders from communities. About fifteen representatives from local agencies, including specialists in home economics, nutrition, horticulture, and animal husbandry, many of them heads of departments, served as regular staff members. The staffs of the School of Tropical Medicine and of the Agricultural Experiment Station and the heads of practically every federal and local agency

[3] Lydia J. Roberts "The Puerto Rican Workshop." An address given before the Inter-departmental Nutrition Co-ordinating Committee, Washington, D.C., July 1943.

participated to some extent. The staff members shared in the work and learned with the group.

The program included a morning period devoted to some aspect of nutrition, followed by discussion on general problems of nutrition in Puerto Rico. In the afternoon the members divided into small groups to consider special problems. The general discussions concerned such themes as fundamental problems of nutrition in Puerto Rico, the reasons for the prevalence of poor nutrition and existing and future measures for improving the situation. The various consultants presented their views. Among the particular subjects discussed were land use, nutrition education in schools, training of elementary teachers, the contributions of different agencies to the improvement of nutrition, and general measures such as the enrichment of flour. Demonstrations were given of the use of local foods, including foods which are not eaten by the people but which are available and might be used to supplement the diet. The use and preparation of imported foods, such as dried milk and eggs, and methods of canning and drying local foods were also demonstrated.

The group as a whole determined what the people were actually eating in different areas and at different income levels, and drew up four diets representing the typical food consumption of various income groups. These served as a basis for planning the measures needed to provide an adequate diet for all the population. The necessary increase in production, in terms of each type of foodstuff, was worked out, and a series of production goals was drawn up. An educational program to assist in obtaining these goals was planned. The participants were then grouped according to their fields of interest, and each group was set to work on its own phase of the problem. Briefly, these groups and problems were as follows:

(1) Elementary teachers—a program for nutrition education in the schools.

(2) Home economics teachers—a series of lessons on nutrition with illustrative charts and other materials.

(3) Extension and farm security groups. These groups combined and were then divided into co-operating units to work out:

  (a) A farm and home plan which both agencies could use;

  (b) A plan for the best use of a six-acre farm, typical of Puerto Rico;

  (c) A handbook for lay leaders;

Members of a Caribbean Nutrition Workshop (1950) learn the technique used in Puerto Rico for reconstituting dried milk.
Photograph from the Department of Home Economics, University of Puerto Rico.

(d) Charts and educational materials;

(e) A bulletin, *Puerto Rican Farm Families Can Feed Themselves*, adapted from a U.S. publication, *Negro Farm Families Can Feed Themselves.*

(f) A series of recipes for a whole dinner in *one* dish, suited to the Puerto Rican method of cooking in one pot on three stones.

The last two days were "achievement days," during which all groups presented their work and findings to the others in dramatic form. The subject of one dramatic sketch was "A Six-Acre Farm Feeds the Andover Family." Another showed a lay leader and his wife using the handbook to help a neighboring family. The elementary teachers dramatized school staff meetings, presenting in this way their plans for the next year and exhibiting the teaching aids they proposed to use to make their teaching "come alive."

At one of the last meetings, plans were made for applying the ideas discussed at the workshops in developing an over-all program for Puerto Rico. The Island was divided into districts with key centers, in each of which one chosen person, with the help of others from the area, was to be responsible for organizing a local nutrition committee composed of representative people. All agencies requested their local staff to attend the local committee meetings as part of their regular work. Work in the districts was then begun by a series of conferences held in strategic places on ten successive days. These were organized by the leader and other workshop members in each area, with representatives from the central agencies attending. Teachers, preachers, local leaders, and other interested people were invited.

The interest and enthusiasm aroused by the workshop provided an impetus which started practical action throughout the country.

TRAINING LOCAL LEADERS

The training of local leaders is of great significance in organizing any program to improve community conditions. The most important kinds of leaders are the following:

(1) People chosen from the area and specially trained over a long period of time.

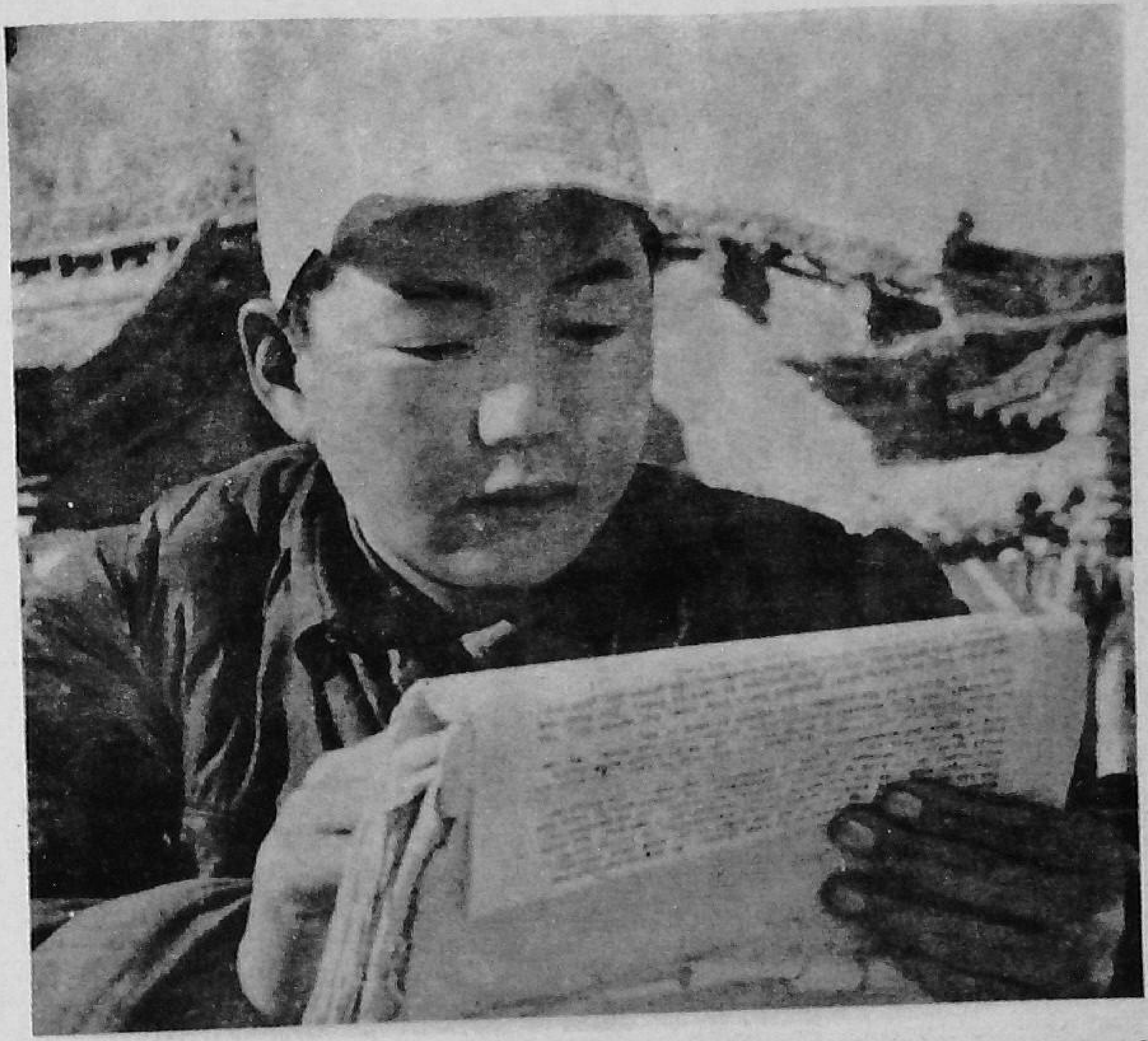
(2) People who are liked, respected, and trusted in the community and who are given some informal training to enable them to help their neighbors by example or by the friendly transfer of information.

Long-Term Training

In training leaders, as much attention should be given to methods by which the confidence of the people can be gained—e.g., procedures to be followed in visiting families and in leading community activities—as to technical instruction. An example of training young people as leaders, falling into category (1) above is afforded by the Shantan Bailie School in Kansu Province, China.[4] In this school children and adolescents from villages are trained to be effective leaders in developing co-operative village industries. They live at the

[4] Food and Agricultural Organization of the United Nations, *Training Rural Leaders. An FAO Study*. Washington, D.C., August 1949.

school for several years, working together and learning skills and ideas which have a direct bearing on village life. When they leave, they are able to help their communities in the long and difficult task of changing from an ancient agricultural economy to a more modern way of life. They usually acquire also the enthusiasm and beliefs necessary to make them desire to spend their lives in the villages rather than leave for the cities. A description of the Shantan Bailie experiment has been published by FAO.



A Shantan Bailie School student studies English. Knowledge of English enables the students to read technical publications not available in Chinese.

Photograph by courtesy of INDUSCO.

Short Courses

Few of the less developed countries, however, are in a position to organize enough schools of the Shantan Bailie type to do the work

needed; quicker and less expensive methods must therefore be found.

The workshop technique can be used to train local leaders with a fairly high standard of education and general knowledge, but it is not so suitable for training less educated people. For this purpose, different methods must usually be employed. In several countries simple lecture courses for local leaders have been given by government specialists or by specialists in some nongovernmental agency such as the Red Cross. This method has the disadvantage, however, that people unaccustomed to studying find it difficult to retain information from lectures. It may be somewhat more successful if it is associated with training given through field days, circular letters, bulletins, personal contact with professional workers, group discussions, and community demonstrations (see Chapter IV). Indeed, field days, group discussions, and community demonstrations are useful methods of training leaders even when they are not associated with specific courses of instruction.

Field days are a part of the program of the Inter-American Institute of Agricultural Science at Turrialba, Costa Rica.[5] Persons from small communities who appear to be natural or potential leaders are invited periodically to see the work of the Institute and to discuss the agricultural methods used; these persons are chosen as a result of informal conversations with many people in the community. They are not formally organized and are not told that they are "key people." It has been found, however, that information given to them spreads through the neighborhood.

Another useful technique is the short-term training camp. This differs from the workshop technique in that a planned schedule of lectures, demonstrations, and activities is followed by the entire group simultaneously. An example of this method of training can be found in Jamaica,[6] but workers in that country feel that they still have far to go to develop it effectively since they are handicapped by a lack of specialists and of source and teaching materials. The camps are organized by the Lands Department of the Jamaican Government. Elected representatives are sent to the camps each year by women's clubs of the Settler's Associations. Each club collects fifteen shillings and a basket of provisions to cover costs of travel and the maintenance of the representative. The camp lasts ten days. Its purpose is to give participants new ideas and experiences which they can pass on to women in their own community. At

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[5] Personal communications from members of the staff at Turrialba, 1949.

[6] Information supplied to FAO by Sybil Francis, Senior Social Welfare Officer, Lands Department, Kingston, Jamaica, B.W.I., January 1950.

a 1950 camp the theme chosen was "The Best For Our Children." The subjects covered included: care of babies and small children and simple nursing; the making of clothes and toys; behavior problems of young children; the feeding and weaning of babies and young children. Classes were held in the mornings and afternoons, and in the evenings films were shown or the group took part in songs and plays. The work sessions were not too long, so that there was plenty of time for leisure and amusement and the women could enjoy the camp as a holiday from the cares of housekeeping. During the last day a competition was held between districts, and prizes were awarded.

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Chapter 4

TEACHING METHODS

SELECTING METHODS

Much that has been said in previous chapters is relevant to teaching methods and suggests how they should be selected and applied to obtain good results. The following further suggestions may be helpful:

The stage of development of the people to be taught and their social and economic background are obviously of great importance. The educator must understand the incentives that are likely to influence people to alter their mode of life. Education should be positive, teaching people what to do rather than what not to do. One of the best methods of stimulating active interest is to relate teaching to home conditions, the daily pattern of life, and to some need which the people themselves feel. Passive interest soon fades. In all types of communities, personal contact between teachers and families helps to convince people that what is taught really applies to them. It is usually better to concentrate on one thing at a time than to try to bring about many changes at once.

Methods used in one country can often be adapted for use in another or may provide useful ideas. On the other hand, methods which are successful in their original environment may be much less suitable elsewhere.

Nutrition should not be taught as dogma, for ideas change with advance in scientific knowledge. It is obviously desirable, however, that those engaged in teaching should agree on the version of the facts to be taught since contradictions in teaching will cause confusion.

In the present chapter, different teaching methods are discussed and some attempt is made to estimate their relative value in educational programs to improve nutrition.

Surveys as Teaching Media

Dietary, nutritional, and social surveys not only provide in-

formation on which food planning and educational programs can be based; they can also be used to some extent as a method of teaching. Co-operating families are often interested in the results. This interest can be used to advantage when an educational program is started immediately after the survey.

Home Visits

Home visits establish close personal contact between pupil and teacher. They enable teaching to be applied directly to the particular problems of individual families and make it possible to influence families otherwise difficult to reach. They may be made by professional workers in various fields, by local leaders, or by other people who have entrée to the home. This method of approach is usually most successful when it embraces all members of the family and is not confined to a single phase of home life. Farm women, for example, should learn something about agricultural methods, and their husbands should learn something about the care of children. Family aims and ambitions are bound together and the interest of the whole family in any new venture encourages and supports each individual member.

Home teaching enables the teacher to obtain firsthand information about the problems of the neighborhood and provides an opportunity to find potential leaders. In general, the method is highly successful. Its disadvantages—that it is time-consuming and expensive, and that the size of the population group which can be reached is comparatively small—are probably outweighed by the results. Once the basic work is done, and enough families are interested, they can influence the rest of the community, which may then be reached by more general methods.

Visits from a complete stranger may arouse antagonism. The doctor, the nurse, and the children's teacher have an initial advantage as familiar visitors and respected members of the community. In some less developed countries the midwives, though often untrained, are accepted into the homes; they have the confidence of the people and are in a good position to pass on knowledge of nutrition and other subjects. If workers not already known in the community must do the home visiting, they should if possible be introduced by someone with local authority and prestige. After the introduction has been made, however, it is usually best for the teacher to visit alone; the family is more likely to talk frankly with no onlookers present. For this reason, families should be interviewed one at a time rather than in groups.

Visitors must learn the customs of hospitality and behave as family guests are expected to behave. All questions should be answered courteously, no matter how irrelevant they may seem. The more questions, the more talk, the more the interest of the family is aroused. Each visit should have a definite purpose, discussion being concentrated on one idea. Many visits, may, however, be needed to complete the discussion of one subject from all angles. No visit should be so long as to interfere seriously with the family routine and so make the visitor unwelcome.

Health education in the home. A hygiene teacher in Java explains the danger of intestinal worms.

Photograph by courtesy of the Netherlands Information Bureau.

Home visiting has proved a useful teaching method in diverse parts of the world. In the Sudan,[1] barely literate local midwives are given some training and sent back to their villages, where they carry out some welfare work in addition to midwifery. Allen, in a report to the Middle East Supply Center, states that this approach has great possibilities and might profitably be used in other parts of

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[1] H. B. Allen *Rural Education and Welfare in the Middle East*, A Report to the Director-General Middle East Supply Centre, His Majesty's Stationery Office, London, 1946, pp. 16-17.

the region. Similarly, Hydrick,[2] in developing a hygiene education program in Java, found that the midwife, though usually untrained, was a useful agent in health education and that home visits were the most successful educational technique.

The Nutrition Service of the Community Service Society, New York, U.S.A.[3] has found that home visiting gives better and more lasting results than other methods among foreign groups transplanted to a new environment. The generalized information on nutrition supplied by the press and radio had had little influence on this particular group, but significant improvement was noted in the eating habits of families receiving personal instruction.

Advisory Centers

Although usually less effective than home visiting, an advisory center to which people can bring their problems may be of considerable value in educational work. Such centers should be accessible, attractive, and comfortable, and the atmosphere should be such as to put people at their ease. The service offered can be announced through the press, through posters, or by word of mouth, so that people know where the center is, what it is for, and during what hours it is open. Attractive window displays help to interest passers-by. There should be space for private discussions so that callers are not embarrassed by having to discuss their affairs before others. It is always a good thing to give visitors something to take home with them as a reminder of what they have learned and to give them further information. Among literate populations this may be a leaflet, a bulletin, or a series of recipes. Among people who cannot read, pictures or other visual material can be given.

This method has its advantages and disadvantages. It is not always easy to attract to the center the people who really need help. Many women are too shy or frightened to visit a center until they know the adviser, and many may be unable to leave their children. It is hard also to establish an office in a location convenient for everyone. On the other hand, a center saves time for the teacher. It may be of value in continuing education begun through contact with individuals or groups in their homes, particularly if the teacher has acquired a real knowledge of local problems. Good attendance

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[2] J. L. Hydrick, *Intensive Rural Hygiene Work in the Netherlands East Indies*, Booklet No. 7, The Netherlands Information Bureau, New York, November 1942.
[3] Dorothy L. Bovee and Jean Downes, "The Influence of Nutrition Education in Families of the Mulberry Area of New York City," *The Milbank Fund Quarterly*, Vol. XIX, No. 2 (April 1941).

of visitors at an advisory center is evidence that the teacher has won their interest and confidence.

In the United Kingdom during the war years, food advice centers were attended by thousands of citizens. The distribution of teaching leaflets throughout these centers was an attraction. People heard about these leaflets through "food leaders," neighbors, or the press. This type of teaching appealed, however, to the middle-income groups rather than to lower-income groups, who perhaps needed help more urgently.

Clinics

Some teaching in nutrition can be given in clinics by talks, demonstrations, or discussion with individuals. It is desirable that a specialist in nutrition should undertake this task, but in practice this

Mothers at a hygiene center in Java learn to take care of their babies and take turns, under supervision of the midwife, in demonstrating methods.

Photograph by courtesy of the Netherlands Information Bureau.

Laundry workers in England attend a food advice demonstration in the calender rooms of the laundry during the lunch hour (1944). Photograph by courtesy of the Ministry of Food, United Kingdom.

is rarely feasible in most countries. Doctors and nurses can, however, advise patients on nutrition and, when a specialist is available, they can support and supplement the teaching the specialist provides.

Teaching in general clinics has some disadvantages. Patients are often nervous, and there is a state of tension which may hinder learning. The people who attend general clinics are sick people, and therefore are not a normal sample of the community.

On the other hand, prenatal and well-baby clinics have been found to be of great value in teaching nutrition in a number of countries. Pregnant and nursing women are usually physically well, and because of their interest in their babies they are eager to learn about diet.

In some areas, clinics are used as centers for public demonstrations and lectures, but this has the drawback that many people may be reluctant to attend because clinics are associated in their minds with illness or with charity.

Demonstrations

In general, people are more likely to comprehend and remember things that appeal to more than one of the senses. Something both seen and heard makes a deeper impression than something only seen or only heard. For this reason, demonstrations are a valuable educational technique. A demonstration of cooking, for example, can be so arranged by enlisting the help of those present and passing around samples of the finished product, that it appeals to all five senses—sight, hearing, touch, smell, and taste. Nutrition demonstrations may deal with such subjects as planting a family garden, canning surplus fruit, or preparing a meal.

"Method demonstrations" and demonstrations of the actual results obtained by members of the community who have tried the method are both effective. They enable people to see for themselves how a thing is done or to observe the improvement brought about by a certain measure. People can then decide for themselves whether they will adopt the practice.

Demonstrations concerned with nutrition and related subjects have been given in many parts of the world. An example is the Puerto Rican demonstration program[4] on the use of dried milk (see pages 126-29). The Rural Center approach[5] (see pages 132-36) is based on continuous demonstration of simple improved practices and the encouragement of local people to try these for themselves.

Demonstrations can be given in any place that is convenient and comfortable; this may be a public meeting place, a place of work such as a factory or school, or a home. The home setting has the advantage of making the recommended practice seem feasible under everyday conditions. The demonstrator should be careful to select the home of a person who is popular and respected in the community and whom the neighbors are likely to imitate. If the wrong family is chosen, however co-operative it may be, the practice is unlikely to spread.

A mobile vehicle in the open air can sometimes be used.

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[4] Lydia J. Roberts, *Nutrition in Puerto Rico*, FAO Document N50/Co2/15, presented at the Nutrition Conference, Rio de Janeiro, June 1950.

[5] D. Spencer Hatch, "Extension Experience in India," chapter 6 of *Farmers of the World*, Columbia University Press, New York, 1945, pp. 61-77.

Demonstration vans have the advantage of more easily reaching large numbers, but their use is limited by weather, and the equipment carried cannot be readily changed to suit varying conditions.

Influential and key people in the community should be among those invited to the demonstrations. There should be sufficient publicity to make sure of a good audience.

A demonstration must be efficiently given if it is to do good. It is important to rehearse the procedure beforehand and to decide on the main points to be emphasized at each step. A note should be made of necessary equipment and materials so that nothing is

Familiar things have meaning: a basket of vegetables—Guatemala.

forgotten. The equipment should correspond closely with that available in the homes of the audience and obtainable in the community. For example, no foods or utensils should be recommended that cannot be procured in local markets or produced by the people themselves. Illustrations and comparisons from the experience of the audience give the demonstration personal application and make it more interesting. Suggestions and comments should be encouraged and listened to carefully.

It is sometimes better not to have an assistant when demonstrating, for this may give the impression that the operation is too complicated for members of the audience to carry out by themselves at home. It may, however, be good to ask some members of the audience to help in certain lengthy operations, provided the demonstrator has already shown his ability to do the work singlehanded. After the demonstration, the audience should be invited to taste any dishes cooked or to share in some concrete way in any products of the demonstration. Recipes, leaflets, or pictures which can be taken home help the audience to remember what has been taught. As a follow-up, volunteers may be asked to carry out the recommended practice in their own homes.

Lectures

Public lectures reach a large number of people at low cost and are useful for publicity purposes. This method of teaching has, however, numerous drawbacks. In a study of the effectiveness of the Community Service Program in Nutrition Education carried out by the District Health Committee of Kips Bay, New York City, Koos[6] found that few, if any, poor families learned directly from lectures. He reports that out of fifty-four women interviewed after a lecture, only two were able to reproduce clearly one fact they had learned. He believes however, that the lectures had some effect in creating a consciousness of the importance of nutrition and in lowering resistance to change. Hydrick, referring to his experience in Java,[7] concludes that "even at best, public lectures awaken a temporary interest so they are not considered a very valuable method of public health education in rural villages. They should be accompanied by demonstrations and practical examples."

Long talks covering a great variety of subject matter should

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[6] Earl Loman Koos, *Food in the Lives of Our Neighbors*, District Health Committee, Kips Bay, Yorkville Health District, New York, 1942, pp. 21-27.

[7] J. L. Hydrick, *Intensive Rural Hygiene Work in the Netherlands East Indies*, Booklet No. 7, The Netherlands Information Bureau, New York, November 1942.

be avoided. Visual material helps people to understand a subject as complex as nutrition and to retain useful knowledge. (See Chapter V.)

Nutrition Courses for the General Public

The nutrition course is primarily useful as a method of training nutrition workers or leaders. As a method of popular education, however, though it is likely to be more effective than an isolated lecture, the course is not very successful. Courses produce more useful results when they are part of an active community nutrition program in which the class participates.

One advantage of the course is that it can be concluded by the award of "graduation certificates" which can be presented at a public graduation ceremony attended by the family and neighbors of the graduates. This may mean a good deal to the participants in terms of status and self-confidence, particularly to women from poor urban families. The award of graduation certificates also helps to maintain attendance throughout the course.

Discussion Meetings and Group Decisions

One of the most important methods of adult education is group discussion.[8] Scientific knowledge of group behavior is still limited, but the subject is being actively studied. The idea that group discussions should be "managed" so that they follow lines previously planned by the leader is disappearing. The need for genuine participation and for the assumption of responsibility by all members of the group is now appreciated. Leaders now realize that they must help individuals to express themselves within the group and must help the group itself to develop into an integrated clear-thinking body responsible for its own decisions. People are more ready to carry out the decisions taken by a group of which they have been active members than to follow the exhortations of a lecturer. Wherever possible, groups should consist of people who have similar background and interests, since this makes for freer discussion and more united action.

The leader should guide the group, supply technical information, and, when necessary, draw attention to obstacles which must be overcome. He should confine himself at the beginning to a short statement of the problem and its background, illustrated by reference to local conditions.

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[8] Some significant work on the technique of group discussions has been carried out. Special reference may be made to the work done by the Child Welfare Research Station of the State University of Iowa, U.S.A., and now being continued by the Research Center of Group Dynamics at the Massachusetts Institute of Technology, Cambridge, Mass., U.S.A.

The following steps leading from discussion to action are adapted from a report by Kurt Lewin[9]:

(1) Setting the stage—an introduction by the leader outlining the problem and the reasons why it is important to solve it.

(2) Relating the problem to everybody in the group.

(3) Requesting group opinion. How would a group similar to this one be expected to deal with the problem? By this indirect approach the group can be helped to decide what needs to be done without actually committing themselves.

(4) Introducing the new food or the new procedure to be tried. The leader quickly takes a census to find out who has tried it before.

(5) Providing information and practical suggestions. At this stage, the leader shows pictures and distributes other tangible materials. If the discussion is about food, recipes can be given to the group. This creates interest and overcomes objections resulting from ignorance of the subject.

(6) Asking for a group decision, possibly by a show of hands. The group usually resolves to take action, having already agreed that a group like themselves (Step 3) would take steps to solve the problem. This decision commits the members to individual action.

(7) Discussing details. For example, those who have tried a new food are asked to describe how they cooked it. This discussion is followed by a group decision on the method to be followed.

(8) Arranging for reporting results. The group arranges for later reports by members. It is thus made to feel responsible for its decisions.

Use of Films in Teaching Nutrition

Sound and silent films are being widely used in teaching nutrition. Their effectiveness for this or any other educational purpose has never been satisfactorily evaluated, even in highly developed countries. There is little doubt, however, that good films used intel-

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[9] National Research Council, U.S.A., Committee on Food Habits. *The Relative Effectiveness of a Lecture Method and a Method of Group Decision for Changing Food Habits*, a preliminary report on a study directed by Kurt Lewin, Child-Welfare Research Station, State University of Iowa, U.S.A. (Mimeographed, undated).

ligently, and as part of a practical training course, can inspire interest and summarize information given during the course by other means On the other hand, they can rarely be used effectively as the sole educational medium, unsupported by other teaching methods.

FAO is collecting information on nutrition films in the hope of being able to help educators in different countries select those which are most appropriate for their purpose. A few simple rules for selecting films are suggested on pages 100-101.

Film Strips, Still Pictures, and Lantern Slides

The film strip, a comparatively recent audio-visual technique, consists of a number of still photographs or photographed drawings arranged in sequence to tell a story and forming a continuous strip of 35 mm. film. Any number of prints can be made from the original negative strip. The film strips must be shown by special projectors, which are available in most developed and some less developed countries. A projector for film strips costs much less than one for motion picture film. The lecturer turns the film strip, picture by picture, and gives a running commentary based on an accompanying script. Alternatively, a gramophone record can be prepared to provide the commentary while someone operates the projector.

An important advantage of film strips compared with the moving films is the very small cost of prints and the ease of mailing, which enables them to be more widely distributed than is usually possible with educational films. An additional advantage is that they provide a means of personal contact with the audience. The audience can participate fully and ask questions about any picture; the teacher can show each picture as long as necessary and can turn back to a previous picture to re-emphasize a point.

On the other hand, the film strip is less exciting than motion pictures; the special projectors are not always available in the less developed countries; and, in the tropics, it is difficult to darken a room in the daytime without making it intolerably stuffy, so that film strips can usually be shown only after dark. Like moving films, film strips cannot be regarded as the principal method of education, but rather as a supplement to other methods.

Pupils can participate in making film strips. In the U.S.A.,[10] for example, children have drawn pictures telling the story of the development of their school lunch program, and their drawings have

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[10] *Workshop Experiences in Learning to Build a Nutrition and Health Education Program*, General Mills, Inc., Minneapolis, Minn., U.S.A., 1948.

been made into a strip to be used in teaching classes. The children learned a great deal of nutrition from drawing the pictures and writing the script.

More specific information on the preparation of film strips appears on pages 101-104.

Still photographs and lantern slides (particularly color slides) are also useful, although perhaps less convenient than film strips.

Posters and Charts

Posters and charts for teaching nutrition can be classified generally into three types:

(1) Those which convey a simple definite idea, such as "breast feeding is best for your baby." They encourage the adoption of some practice without an accompanying verbal explanation. They are useful for teaching purposes, but unless they are frequently changed people become accustomed to seeing them and their impact is lost. This type of illustration can be used with people who cannot read.

(2) Those which explain the reason for the action recommended. This type may illustrate such concepts as "protective," "energy," and "body-building" foods, or may show the various groups from which some foods should be chosen every day for a good diet. To strengthen the argument for the recommended procedure, it is often necessary to present scientific knowledge in highly simplified form without the provisos which normally accompany scientific statements. Posters and charts of this type are useful in teaching people who have no information about nutrition or whose educational background is limited. They can be used in lectures and demonstrations for lay audiences.

(3) Those which illustrate accurately, through pictures or graphs, scientific facts in the field of nutrition. These are most effective when accompanied by written or verbal explanations which enlarge upon the subject matter. They can be used to illustrate points when an educated audience is being addressed. Such subjects as the composition of foods, the results of animal feeding experiments, and the growth of children can be presented in this way to support the statements of the teacher. For

example, simple bar graphs can be colored during a lesson to show the contribution of various foods to the daily diet. It is obviously unwise to use the more complicated types with people who have had no previous experience in interpreting graphs.

Some health workers have found that if people take the pictorial charts or pictures into their own hands, the physical contact in some way helps them to grasp the ideas these convey. It has also been found that one of the best ways of interesting children or even adults is to encourage them to make posters themselves. For example, in the Canadian program to improve the diet of Indian school children, a poster competition was held for all children over nine years of age.[11] Each child was asked to submit a poster on the meals he enjoyed. From these, the teachers learned a great deal about the food habits of the children, and they used this knowledge in planning school meals.

Exhibitions

Exhibitions can give publicity to a program and, by presenting ideas in a form that can be readily grasped, may interest people who are not reached by other methods of teaching. When the examples and forms are simple and familiar, they may be of value in teaching people who cannot read. The Government of India, for example, uses a nutrition exhibition[12] as a means of influencing large population groups. Posters, real foods, and models are displayed in this exbihition, and explanations are given by trained persons. The demonstration of animals that have been fed good or bad diets has been found to have a popular appeal. Films, lectures, and other demonstrations supplement the exhibition. Some Indian states have made exhibitions of their own which resemble the prototype organized by the Central Government but are adapted to local dietary needs and habits.

But as exhibitions tend to stimulate only momentary interest, they must be followed up by other types of teaching; otherwise the interest aroused is lost. Often, also, the exhibits are expensive, and expenditure on a professionally built exhibition may not be the best use of funds available for educational purposes. However, amateur exhibitions can be made inexpensively, with the guidance of teachers

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[11] Information given to FAO by L. B. Pett, Chief, Division of Nutrition, Department of National Health and Welfare (Canada), 1948.

[12] K. K. P. N. Ráo, unpublished paper, 1947. The author is now a staff member of the FAO Nutrition Division.

Nutrition education exhibits at the Ministry of Food, London
Photograph by courtesy of the Ministry of Food, United Kingdom.

or leaders, to illustrate the work of youth clubs or a community nutrition program.

Plays and Puppet Shows

The use of plays and puppet shows in teaching nutrition allows plenty of scope for activity and imagination. Scripts can be written by members of the group, although sometimes a script written by a specialist can be used widely throughout a territory to teach some

particular point in the program. In Puerto Rico, a short play on a good diet for Puerto Ricans was written in the Department of Home Economics, University of Puerto Rico. (See page 47.) The play was learned by many different groups of students and performed during a Fair week before large audiences. The students, as well as the public, learned nutrition from it. Copies have since been in great demand throughout the Island.

Puppet plays can be informative as well as entertaining, but they must be melodramatic or amusing to be successful. Simple

Puppet show at a Guatemalan school.
Photograph by courtesy of the Institute of Inter-American Affairs.

puppets (see page 107) can be dressed in local costume, and the sets and the story can illustrate local nutrition problems and suggest methods of solving them.

The Colonial Department of the University of London, Institute of Education, encourages its students to make puppets and produce shows. An excellent puppet play was produced by African students, who made the puppets, wrote the script, and staged the production. The story is about an African village where the palm trees are dying, threatening disaster to the villagers. The chief and council of elders do not know what to do. A little boy who has learned to read interprets for them an agricultural leaflet which gives the remedy. The trees are cured, the village prospers, and the elders and villagers decide that they too will learn to read. The show ends with a festive procession and singing.

Education through Group Feeding

Well-planned school, industrial, or community meals are media for teaching better food habits. The pressure of group opinion in a school or factory can induce children or adults to eat foods that they would not touch at home. For the meals to be popular, they must be attractively prepared and served in pleasant and cheerful surroundings. Information can be given about the foods included in the meal. New foods should be introduced gradually, only one at a time; a new food is accepted more readily if served with an old favorite.

In factories, co-operation is often more easily obtained if influential representatives of the group are appointed to a committee on menus and food preparation. In schools, food grown by the children in a school garden is likely to be popular and acceptable. When a liking for new foods is built up in this way, they may subsequently be included in the home diet.

In a large industrial plant in London, the manager of a well-organized canteen taught workers to eat vegetables and salads. The canteen was airy and pleasant, and facilities were provided for recreation and relaxation. The vegetables were well prepared and the meals were served attractively. A committee of workers assisted the manager in the program of education. They had the good will and informed co-operation of the canteen and kitchen staff, a matter of great importance in all such ventures. Improvements in children's food habits have been achieved in a similar way through school-feeding programs.

Gardens and Small Livestock

The encouragement of gardening and the raising of small livestock usually have great practical value in a nutrition program. These foods supplement the regular supply, provide a more varied and nutritious diet, and reduce the cost of living. People, especially children, are usually ready to eat the foods they themselves grow, even though they may be unfamiliar foods.

This method of approach is naturally easier in rural areas, where more land is available. But even in cities, allotments can be made available for gardening if the authorities are interested. Gardening and projects for producing small livestock can be developed by communities, schools, or individuals, but central planning and technical advice are needed so that the foods required to supplement the diet can be successfully produced. Small-scale developments of this kind can be advantageously co-ordinated with a national nutrition or agricultural extension program.

In the United States, the wartime national garden program[13] included more that 18 million gardens. The Department of Agricul-

[13] *Gardening for Victory*, a digest of proceedings of the National Victory Garden Conference, Chicago, November 1943, National Victory Gardens Institute, New York, 1943.

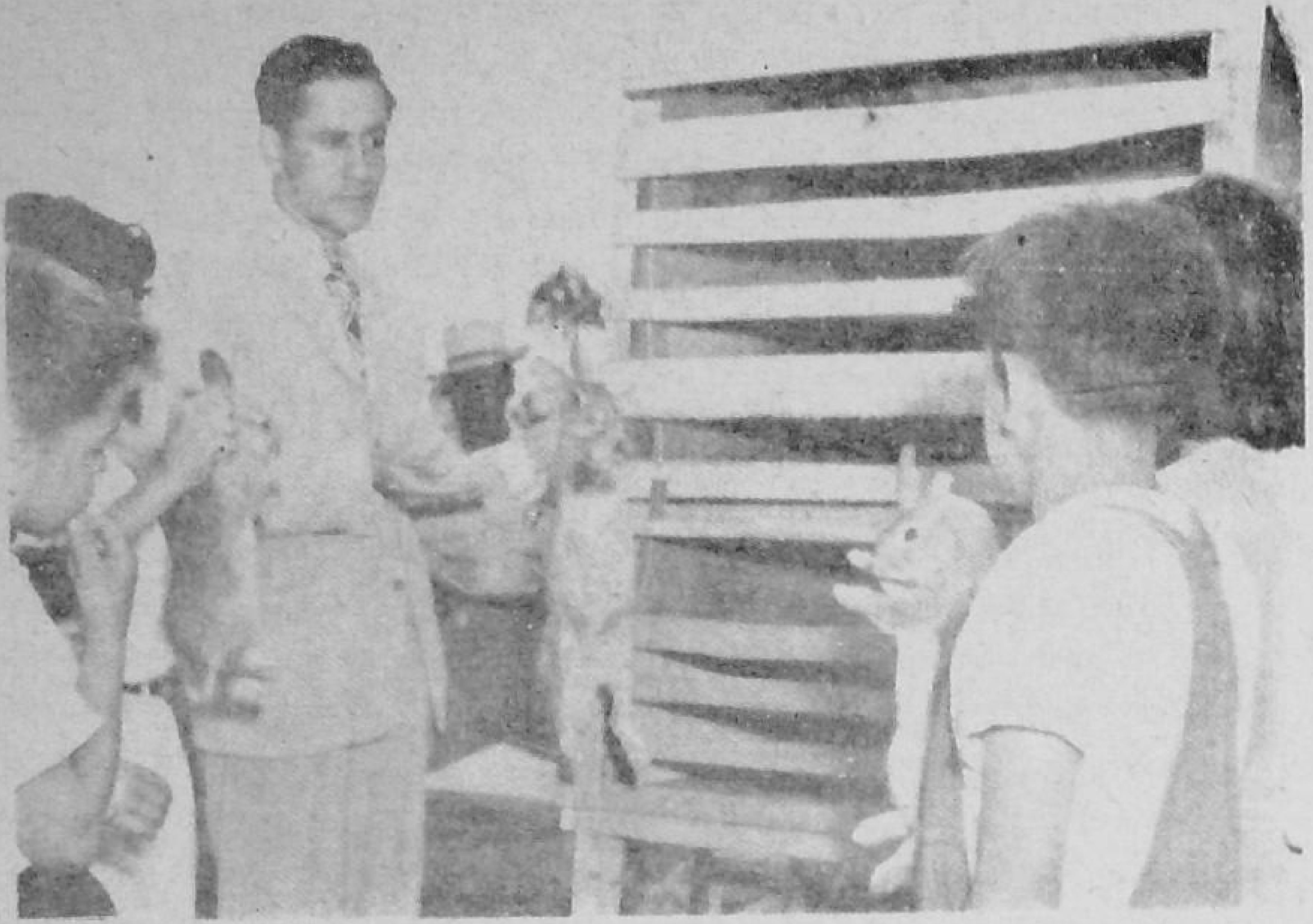
Pleasant surroundings help to make school meals educational—Chile.

ture Extension Service, in co-operation with many public and private agencies, led this movement and supplied expert advice for it. The program was linked with the idea of better nutrition for better health. It continued after the war as a "Freedom Garden" program, related to the world's need for more food and to the long-range objective of improved national health and nutritional standards through increased consumption of fruits and vegetables. A food-preservation program has been carried on in conjunction with the gardening program in order to save surplus food for out-of-season use. This is an important way of improving nutrition in rural areas and in countries where fresh foods are plentiful in summer and scarce in other seasons.

In Guatemala, children in many of the rural schools are taught to grow vegetables and keep chickens and rabbits. The produce is used for school meals, which the children eat with enthusiasm, although some of the vegetables are not yet popular in their homes. The children are encouraged to start home gardens for themselves. (See pages 118-21.)

A difficulty which sometimes arises with school gardens in

A school garden in Guatemala.



Teaching the principles of rabbit keeping at a Guatemalan school. Photograph by courtesy of the Institute of Inter-American Affairs.

temperate zones is that the best part of the growing season is during the summer vacation, and early crops mature at this time. If the garden is in a village where the teacher and pupils remain for the summer, they can continue to care for it themselves. If, however, the teacher leaves the district during vacation time, arrangements may have to be made for other adults to help the children tend the gardens during this period and preserve the surplus foods. In hot and dry climates, the provision of water for school gardens may create a challenging problem.

Exhibits of garden produce and livestock at local fairs encourage gardening and promote the popularity of new foods.

Newspapers and Magazines

The printed word carries prestige and inspires confidence. "It must be true," people say; "I read it in the newspaper." In countries where newspapers are widely read, therefore, this medium is particularly useful for education in nutrition. Rural people, especially, rely on newspapers and magazines for information. Their arrival in isolated places is an event, and they are often read from cover to

cover. Editors of newspapers and magazines are among the experts who should be asked to help with a nutrition program.

This educational method is usually most effective when combined with other methods of teaching nutrition. There is a tendency, particularly among urban families, who have many claims upon their attention, to skip didactic articles unless their interest has already been aroused. Newspapers and magazines do, however, provide a means of reaching large numbers of people quickly at one time.

Books, Pamphlets, and Bulletins

The average person, even though reasonably well educated, does not study a technical or semitechnical book unless he has a special need for the information in it. Such books are useful in a training program, but are of little value in popular adult education. Children's books, on the other hand, can provide both amusement and information.

Popular pamphlets, bulletins, and leaflets have a definite place in a nutrition program. In the Netherlands,[14] for example, a series of attractive nutrition and cookery leaflets, publicized by radio, have won wide popularity. They are sold at exhibitions, demonstrations, lectures, and in grocery shops. A small charge is made for each leaflet because it is considered that people make better use of something they have to pay for. The circulation of these leaflets is estimated as 750,000 annually. Similar pamphlets have proved popular in Czechoslovakia, Venezuela, and many other countries. Other channels of distribution include markets, libraries, maternal and child welfare clinics, and gasoline stations. Marked copies of leaflets can be used by nutrition services to answer inquiries. In some countries, the existence of many languages and dialects may make the use of leaflets difficult. But, when leaflets can be written in the local dialect, they are likely to have great popular appeal.

A monthly bulletin, *Food and Nutrition,*[15] published in India, during and after the war, was of a somewhat technical nature. Similar periodicals and journals are published in other countries, but their reading public is necessarily limited. They are a useful medium for maintaining the interest of workers in nutrition and allied fields.

Circular Letters

Circular letters can reach a large number of people who cannot

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[14] M. J. L. Dols, unpublished paper on Nutrition Education in the Netherlands, prepared for FAO, 1948.

[15] *Food and Nutrition,* published by the Department of Food, Government of India, New Delhi.

The people of Udi, Nigeria, learn to read as a step towards improving their way of life.

Still photographs from the film *Daybreak in Udi* by courtesy of the British Colonial Office.

be reached easily by other means. Experience suggests, however, that letters or notices advertising courses or an advice center are likely to be ineffective. The community service in nutrition education at Kips Bay, New York City,[16] distributed a small circular to each home in two tenement blocks near the health center. The circular promised new information about nutrition and foods, and offered free bulletins and publications. None of the visitors to the center came in response to the circular.

On the other hand, after interest has already been established by other means, circular letters can be a successful device for keeping in touch with local leaders or families. The "food leader letters" used by the U.K. Ministry of Food during the war offer an example of this use. These letters, containing food news, new recipes, and short articles of general interest on food, were sent out monthly to food leaders representing women's organizations or groups of women living on the same street or working in the same factory. They provided a popular and useful way of passing on information to the people. Constant contact was maintained, however, between the food leaders and the

[16] Earl Loman Koos, *Food in the Lives of Our Neighbors*, District Health Committee, Kips Bay, Yorkville Health District, New York, 1942.

local personnel of the Food Advice Centers, which stimulated continued interest and the "food leader letters" were only a part of the program.

Radio

If a considerable part of the population has access to a radio, broadcasts on nutrition can usefully supplement other methods of teaching. These offer a quick means of spreading information to large numbers at one time, and they can be given in a simple style that has popular appeal. They may be the only means of reaching people in certain isolated places. There is evidence that as an educational medium, radio talks can give a good return for money spent.[17]

At a meeting on extension in Latin American countries convened in 1949 at Turrialba, Costa Rica, by FAO and the Inter-American Institute of Agricultural Sciences,[18] the delegates agreed that radio can be used effectively in Latin America if the programs are carefully chosen and are lively and appealing. It was suggested that discussion by listeners following the broadcast could be arranged by

[17] Lucia da Crile, *Some Findings from Studies of Farm and Home Radio Programs*, Circular 457, U.S. Department of Agriculture, Extension Service, February 1949.

[18] Report of the Technical Meeting on Agricultural Extension arranged by the Food and Agriculture Organization of the United Nations and the Inter-American Institute of Agricultural Sciences, Turrialba, Costa Rica, August-September 1949 (FAO paper, mimeographed).

leaders through formal discussion groups or promoted through informal talk in homes, cafes, or village meeting places. The Canadian Broadcasting Corporation has developed a variety of successful techniques for adult education.[19] Outstanding among these is the National Farm Radio Forum, through which broadcast discussions and written teaching materials reach local discussion groups throughout Canada. The opinions and conclusions of these groups in the different provinces are summarized and presented during a part of each broadcast.

Radio can be an important tool even in less developed countries. It has the advantage of reaching people who cannot read. In areas where entertainment is scarce, listening to community radios may be a popular social occasion as well as a method of learning. In some countries, for example in certain parts of India, the village radio is replacing the itinerant story teller. In other parts of the world, people sometimes assemble in public squares to listen to broadcasts.

Teaching through Literacy Campaigns

The spread of literacy and the improvement of nutrition, health, and welfare are often closely associated. In a campaign to increase literacy, the reading matter provided for practice can, with advantage, be concerned with health and welfare.

China's popular education movement began with the teaching of a simple Chinese written language of 1,000 basic characters.[20] The movement was soon broadened to include improvements in food production and health. In Nigeria, also (see page 121), teaching of reading and writing has led to improved welfare and nutrition.[21] Another example of a literacy campaign associated with a broad program of development can be found in Mexico.[22]

INTEGRATION OF METHODS

In the previous chapter different educational methods have been discussed, many of which cannot successfully be used alone,

[19] Canadian Broadcasting Corporation, *Five Years of Achievement, 1936-41*, Pamphlet No. 6, *Agriculture*, Department of Press and Information, CBC, Toronto.

[20] Pearl S. Buck, *Tell the People—Mass Education in China*, Pamphlet No. 16, American Council Institute of Pacific Relations, New York, 1945.

[21] E. R. Chadwick, "Communal Development in Udi Division," *Oversea Education*, published by the Secretary of State for the Colonies, His Majesty's Stationery Office, London, Vol. XIX, No. 2 (January 1948).

[22] Secretaría de Educación Pública, *Memoria de la Secretaría de Educación Pública*, Mexico, 1947, *Ibid.*, 1948.

but must be combined with other techniques. Moreover, improvement in nutrition depends on developments in other directions, such as increasing the supply of foods needed to provide a balanced diet. A co-ordinated approach is obviously required. This section considers nutrition education in the schools and through community programs, with special reference to the application and integration of different methods.

Nutrition Education in Schools

In teaching nutrition to children, the same general principles apply as in teaching adults. Suitable incentives for improvement must be found: in children the incentives may be ambitions, such as the ambition to be attractive or to be good at sports or to get on in the world. Health practices should be associated with such incentives and not with school routine. "Learning by doing" is even more important with children than with adults, and this approach should be followed throughout a school nutrition program.

To develop such a program, the school administrators and teachers must be convinced of the need for it and willing to undertake their share of the work. There are schools with no lunch program because the teachers are unwilling to spend their lunch hour in supervising it. But good teachers, once they realize the contribution that nutrition can make to the health, well-being, and mental alertness of their pupils, will usually become enthusiastic.

The chief responsibility for the program rests with the class teacher. He knows his pupils and their home background, he can observe them every day, and can adapt his teaching to the problems of the group or to those of individual children. However, if the school employs special teachers for subjects associated with nutrition and hygiene, these can help by making their specialized knowledge available to the class teachers and by linking their work with class projects. In any case, it is most desirable that some person with a knowledge of nutrition, whether a teacher or a visiting consultant, should help to guide the program. If this person is on the teaching staff, he should take the responsibility of co-ordinating the whole program, assisted by a committee of teachers. If an outside consultant must be used, schools with several teachers should choose one teacher to co-ordinate the program, assisted by a staff committee.

Nutrition and health teaching can be integrated into the general curriculum of a school so that pupils learn some aspects of the subject in many of the classes they attend. The following suggestions illustrate this point with regard to nutrition

Reading, writing, and composition. Charts and texts giving simple information on nutrition and health can be used as materials in teaching reading, and the children can write simple stories on these subjects.

Arithmetic. Problems in arithmetic can be based on foods—for example, the calculation of the cost of various foods in the school lunch or of the profits in growing and selling vegetables. The children can learn to make graphs and charts of their own growth and of other subjects relating to nutrition and health.

Woodwork and other craft classes Food models, puppets, and other material for nutrition exhibitions can be made by the craft classes.

Art classes. Murals, pictures, and posters on nutrition subjects, illustrating school and community activities, can be made by

A Guatemalan child paints decorations for the school lunch room. Photograph by courtesy of the Institute of Inter-American Affairs.

the art classes. These can be used in exhibitions and to decorate the classroom and the school lunchroom.

Geography. The food habits and food production of other countries can be studied in the geography class.

History. The development of food habits and the effect of food shortage or plenty on world affairs can be included in the work in history. This is appropriate for high school students.

Nature study. The eating habits of animals and the different food plants and animals in the area can be observed.

Music and drama. Plays and puppet plays on nutrition and health can be written and acted by the children. Songs can be composed about nutrition activities.

Agriculture and gardening. The children can learn from a teacher, or from visiting advisers, how to produce some of the foods needed for a good family diet. They can plant a school garden and produce foods for the school lunchroom.

Home economics. Menu planning, food values, cooking, and food storage and preservation have an essential place in the home economics course. Care should be taken that the course is conducted along the lines of modern nutritional principles.

Science. Elementary food chemistry and the simple physiology of plants, animals, and human beings can be introduced in the science courses.

Social studies. In the social sciences, the children can be introduced to family budgeting and can obtain some understanding of the relation between economic status and food production, supply, and intake.

Health and physical education. These classes offer a good opportunity for teaching the importance of nutrition in maintaining health and physical development.

Library work. Assignments which entail looking up references and collecting articles can include materials on nutrition and related subjects.

In modern schools, children are often set to work on some "study project." Individuals or groups of children are asked to study one particular subject from various aspects and to present the results to the rest of the class. Subjects concerned wholly or partly with nutrition—for example, "where our food comes from," "the story of milk from the farm to the table," etc.—can appropriately be assigned as the subject of such a project.

Nutrition teaching should begin when the children enter school; good habits are most easily formed at an early age. The work must be carefully graded so that each class has fresh goals and activities. Lessons should, of course, become more complex as the child develops; children become bored with a subject presented in the same recognizable guise year after year. In high school, or when children reach the age of 15 to 17 years, nutrition can be taught as part of such sciences as chemistry, biology, and physiology.

An integrated program requires planning by the teaching staff. An example of such planning has been outlined by the Department of Nutrition, Harvard School of Public Health, Boston, Mass., U.S.A.,[23] with the co-operation of the public schools of Newton, Massachusetts, and the Newton Nutrition Center. Other books and pamphlets, containing suggestions for nutrition teaching and activities in schools are listed in the bibliography at the end of this chapter.

It is, of course, clear that the nutrition and teaching program suggested in this section will be feasible only in a large, well-equipped schools with an adequate staff. In a small school in which there is perhaps only one teacher, only simple and elementary facts can be taught. But even in such circumstances, children can be trained in better diet and health habits (see pages 118-21). Teachers can be provided with a simple written guide for this purpose.

Community programs and school programs should, if possible, be closely integrated. The teacher is a link between the school and the community. A school program can often be used as the starting point of a community program.

Community Programs

The organization of community programs has been considered in various sections of this report. The importance of local leaders and the need for the active participation of the people have been emphasized. It has also been suggested that concentration on one specific objective (e.g., increasing the consumption of a particular food) is often the best way to start a program and that a variety of methods can be used simultaneously to achieve such an objective. In some communities, however, it may be advantageous to develop several objectives at one time. The link between better nutrition and other improvements must always be borne in mind in organizing programs.

Some of these points are illustrated by the following examples.

[23] *Goals—for Nutrition Education for Elementary and Secondary Schools*, Department of Nutrition, Harvard School of Public Health, Boston, Mass., U.S.A., 1947.

A program including many activities and methods was started in 1942 by a rural county in New York State, U.S.A.,[21] After one year, its activities were reported as follows:

1. An integrated program of nutrition education is shaping up within the schools. Each teacher is teaching some phase of nutrition through projects adapted to the ages, interests, and needs of the students, beginning with the first grade.
2. Surveys have been made under medical direction to locate children suffering from malnutrition.
3. A county council of social agencies has been organized to act as a steering and clearing committee for welfare work in the county.
4. Plans have been made for giving emergency assistance to families in acute distress for lack of food.
5. Many farm families have planned their year's food supply, and have pledged themselves to produce as much of it at home as possible.
6. Victory gardens are being planted at home and at school.
7. Classes and demonstrations in canning and food preservation are being given throughout the county.
8. A lunch period has been organized for every school.
9. Grocers have stocked up on whole grain and enriched bread and cereals to meet consumer demand.
10. A local newspaper is publishing articles relating to the nutrition program.
11. A local workshop in nutrition for teachers has been held under the auspices of the State University.
12. A community bakery and canning center has been established to supply food for school lunches.
13. A youth committee has been organized to help with nutrition surveys and to work with the local parent-teacher council in writing the history of the local nutrition program.
14. Nutrition study groups under local leaders have been organized.
15. A leaflet with the heading, 'This Is What I Need to Eat Daily,' has been mimeographed and posted in every eating place and restaurant in the county, including the roadside grills and lunchrooms.

An example of a community program that has been developed by introducing a series of improvement in sequence over a period of

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[21] United States Department of Agriculture. NFC. 6. War Food Administration. *Democracy Means all of U.S.*, Washington, D.C., 1943, pp. 8-9.

years is offered by the village of Morell, Prince Edward Island, Nova Scotia.[23]

This program has grown out of the Antigonish Movement, an extension program started in 1929 by the University of St. Francis Xavier, Nova Scotia, for the Maritime provinces of Canada. The people of these provinces, mostly farmers and fishermen, were badly in need of help. Inefficient methods of production and marketing, combined with economic feudalism and an economic depression, had brought them into a state of dire poverty.

The Antigonish movement has for its objective a full and abundant life for everyone. It advocates economic co-operation as the first step toward this objective and as the foundation of all subsequent developments. The techniques used by its extension workers include the following: mass meetings, study clubs, a leadership school of six weeks' duration to provide local leaders, community refresher courses for workers, training courses on community organization and the administration of co-operatives for leaders and employers, radio listening groups which discuss vital topics of local interest, "kitchen" meetings held by field workers in the homes. Pamphlets, library books, and educational films are used as tools in the program. Village credit unions are established, which, in addition to supplying needed short-term credit and putting the savings of the people to good use, provide a training ground for community organization.

Until 1938, the Antigonish movement had not reached the rural village of Morell, and conditions were very bad. But in the following ten years the people worked together to solve their problems by co-operation. First, they organized a credit union, and then they built, one after another, a co-operative store, a fish-canning plant, a creamery, a potato warehouse, a new community hall, a new school, and an outdoor skating rink. Great improvement in the economic condition and general welfare of the people has taken place, and progress toward a full and abundant life for everyone is still being made.

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[23] Extension Department, St. Francis Xavier University. *The Antigonish Movement in the Maritime Provinces of Canada.* Educational Approaches to Rural Welfare. Food and Agriculture Organization of the United Nations and the Inter-American Institute of Agricultural Sciences. FAO, Washington, D.C., 1949. *Also* B. Y. Landis and M. M. Coady, *The Antigonish Movement.* From Adult Education in Canada (Publication of Canadian Association for Adult Education), Toronto, 1950, pp. 195-203.

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Chapter 5

TEACHING MATERIALS

CHOICE OF PREPARATION MATERIALS

Teaching materials must be simple and clear. The central idea should stand out plainly; extraneous matter and trimmings which tend to confuse should be avoided or reduced to a minimum. The materials should be suited to the cultural background and educational standards of the audience and should, if possible, be concerned with familiar objects, scenes, and subjects, to give them personal application. Materials prepared for a different country or region can seldom be used in their original form, but adaptation to local usage is often possible.

The value of visual aids in presenting technical information is now widely recognized, and in the past few decades the preparation of such aids has become a highly developed technique. It must be emphasized, however, that visual aids are *aids*. They have an important place in the nutrition educational program, as have other aids such as the simple story, the nutrition play, or the record card. But the success or failure of a teacher depends less on the materials he uses than on his ability to establish and maintain rapport with those he teaches.

Pleasant and hopeful illustrations usually have more appeal and teaching value than unpleasant ones. A picture of a healthy child, with accompanying information on how this state of health can be achieved, is likely to have greater influence that a "horror picture" of a seriously malnourished child, accompanied by advice on how to avoid malnourishment.

Economy and ease of production are frequently important factors in determining the materials to be prepared. Community participation in making them can save money and is in itself a useful method of teaching. Workshops (see pages 43-48) are excellent centers for such activities.

Written Matter

The written word is an essential part of many teaching aids and materials. A few comments on the art of writing may therefore be relevant here, but it is obvious that so complex a subject cannot be adequately discussed in a technical publication of this nature. It may be added that these comments are applicable to educational material rather than to writing for other purposes.

Good writing is simple, concise, and easily understood. It is axiomatic that the simpler and clearer writing is, the more work has been put into it. Few people realize the hard work that goes into the preparation of a simple four-page leaflet that successfully presents an idea.

People who can write have usually learned how by writing and through criticism. The capacity to accept criticism is important in a writer preparing materials for a group activity or program. His product should be passed around in draft form to several of the people in charge of the program, and all valid suggestions and corrections should be incorporated. A writer with excessive pride of authorship or unwillingness to work with the group is of scant use.

Few universal rules can be laid down for effective writing. A written product must be judged as pragmatically as a piece of machinery acquired for a specific purpose—does it work? The ways of achieving a workable written product are as various as the personalities of the people who write. A few professional writers can think everything out beforehand and set down clear final copy immediately, but most writers, even professionals, develop a theme as they write. They may rewrite several times before they have a usable draft. Some writers outline everything in close detail before beginning to write; others find that a rigid outline destroys the flexibility they feel they must have.

The writer must understand his subject and his audience. The less educated audience, the simpler the presentation must be. Yet the sin of "writing down" to people must everywhere and always be avoided.

That writing can be informative and yet simple enough for an audience without much schooling is illustrated by several pamphlets written by Laura Blackburn and Julia Porcher Brunson for the South Carolina (U.S.A.) State Board of Health. Plates on pages 86 and 87 are taken from booklets by these authors.

In writing any publications for teaching purposes, the author should have in mind the answers to the following questions:

FOOD MAKES A DIFFERENCE

Do we have proof that food makes a difference? Yes.

Let us look at Mr. Jones' farm.

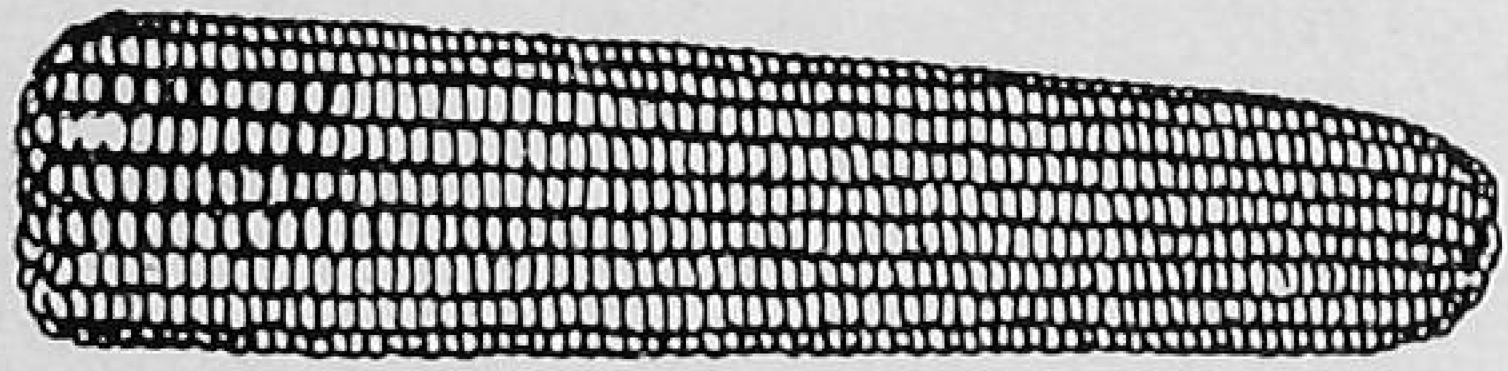
Mr. Jones is a good farmer and we can learn some things from him.

Mr. Jones has learned that he must fertilize his land to make good crops.

Fertilizer is plant food.

Mr. Jones has learned what kind of food plants need.

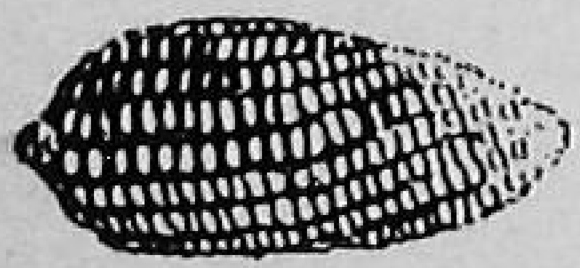
This ear of corn came from Mr. Jones' farm.



Mr. Smith is a farmer too.

Mr. Smith does not know what kinds of food his crops need.

He is not a good farmer.



This ear of corn came from Mr. Smith's farm.

What makes the difference in this corn?

HOW THE UNBORN BABY GROWS

The unborn baby has only the air that its mother breathes.

The unborn baby has only the food that its mother eats.

If the mother does not eat right the baby does not have enough food.

Foods For Mother

Milk—One quart every day.

Sweet milk, skim milk, buttermilk, evaporated milk, and dry milk powder are all good.

Eggs—One or more each day. Do not cook them in much grease. Boil or poach them sometimes.

Simple writing can tell a story effectively. At left, a page from *America and You*; above, a page from *Planning for Baby*.
Courtesy of the South Carolina State Health Department.

To whom is it addressed? What are the problems of these people? their interests? their beliefs? their economic situation? Once the audience is clearly perceived, concepts can be chosen that will be within its experience and will bring it the desired message.

What is the purpose of the publication? Is it to stimulate initial interest in a subject? to answer a specific question? to explain a particular process? to bring about a definite action? All that is not pertinent to the purpose should be ruthlessly shorn away. If some cherished material cannot be used here, perhaps it can be used elsewhere.

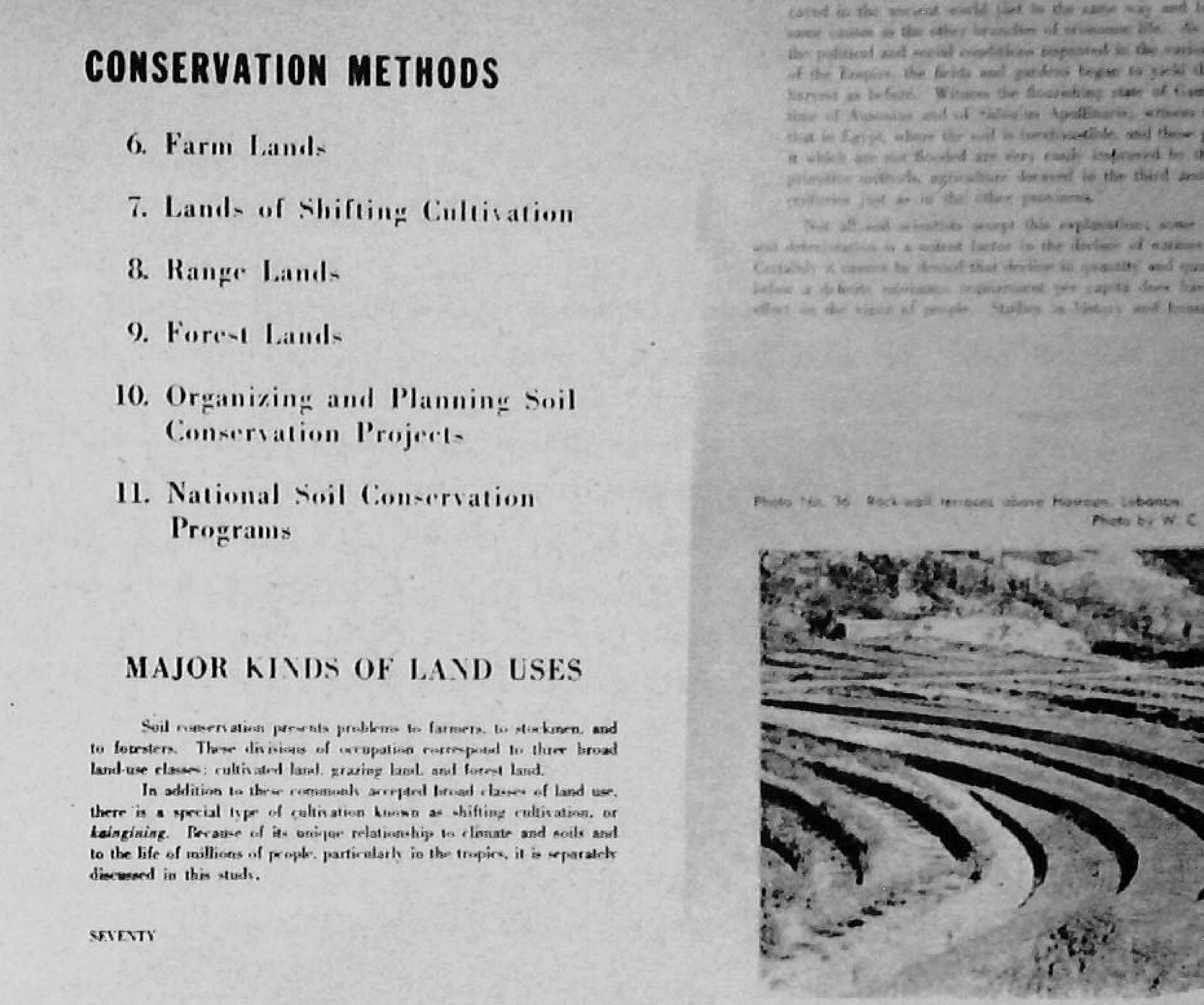
What is the publication to contain? Is the material practical, timely, interesting? An ably wielded blue pencil may be needed to confine it to basic things.

How is it to be arranged? Any written material, whether for a leaflet or a book, must have arrangement and structure. It must have a beginning, it must have progressive development, and it must move to a logical conclusion. Different people develop themes in different ways. It is usually best for a writer to develop the subject in his own way, taking into consideration the audience, the facts involved, and the end to be attained. Once the material is in draft form, it can be submitted to the critical judgment of others. Then, after the necessary revision, it can move on toward the next stage—publication.

Layout and Illustrations

Wherever possible, text should be written to conform to the layout. Good layout designs, when purchased in the open market, are expensive, but sometimes a writer will have imaginative ideas on the graphic presentation of his material and can design his own layout. Often an artist, designer, or capable printer can be found who will be sufficiently interested in the program to make good layouts at a minimum fee or even without one.

Good pictures, attractively laid out with the text, greatly increase the value of written teaching matter. Pictures must be chosen for a definite purpose. They should illustrate a concise idea or fact, or have an emotional appeal leading to a specific action, or both. Clarity and simplicity are essential in any illustration, whether it is a graph or a drawing. The presence of many objects in an illustration tends to confuse. Illustrations should appeal to those


CONSERVATION METHODS

6. Farm Lands
7. Lands of Shifting Cultivation
8. Range Lands
9. Forest Lands
10. Organizing and Planning Soil Conservation Projects
11. National Soil Conservation Programs

MAJOR KINDS OF LAND USES

Soil conservation presents problems to farmers, to stockmen, and to foresters. These divisions of occupation correspond to three broad land-use classes: cultivated land, grazing land, and forest land.

In addition to these commonly accepted broad classes of land use, there is a special type of cultivation known as shifting cultivation, or *kaingining*. Because of its unique relationship to climate and soils and to the life of millions of people, particularly in the tropics, it is separately discussed in this study.

SEVENTY

An example of good layout. Two pages from *Soil Conservation*, an FAO publication, illustrating clarity and pleasing arrangement.

who look at them; children and young animals, for example, are favorite subjects in many countries. Familiar objects and background should be chosen whenever possible, and it is important that every detail in the illustration should be accurate. People will reject the message of a picture, and perhaps even lose confidence in the entire educational program, if they discover inaccuracies in objects or scenes familiar to them. No illustration should ever be used that offends the beliefs and tastes of the people.

When indigenous folk art exists, its use for illustrations is to be recommended. It has the advantages of being accurate in cultural detail and congenial and familiar to the public. It can frequently portray a local problem more sharply and succinctly than commercial illustrations and at much less expense.

Photographs. Clear, sharp prints are essential for good reproduction in any printed publication, whatever the process of printing employed. Glossy prints are preferable, but good results may also be obtained from good mat-finished prints. Fuzzy, out-of-focus, or gray prints will of course not improve in reproduction. When large prints are scaled down for reproduction, they become sharper; on the other hand, the enlargement of small prints gives a less sharp

result. Sometimes a small section of a photograph tells a clearer story than the entire picture, and the photograph can be cut to remove unnecessary detail.

An early start should be made at gathering illustrations for a publication. As the manuscript progresses, more or better photographs or additional art work are often found to be necessary. If any of the material that is to be reproduced is copyrighted material, time is needed for obtaining permission.

Art work. This term denotes the production of drawings, maps, charts, and cover designs and the retouching of photographs. It usually involves handwork by skilled professional craftsmen, but sometimes a talented amateur can be found in the community to do this work.

Printing (Reproduction) Processes

The four processes described below are likely to be of most value in the kind of educational work under consideration.

(1) *Letterpress printing:* This is the ordinary printing process used in making books. While often more expensive than others, it gives the best reproduction of illustrations, the sharpest impression of type, and the greatest clarity of ink colors. Color printing is expensive, since each color must be printed separately.

(2) *Offset-lithography:* This process, essentially a photographic one, produces clean printing which is less sharp than letterpress printing. It is usually more economical, however, because no special plates for reproducing illustrations and art work are required, as in the letterpress process. When the text represents 60 percent or more of the total publication, or when the publication is being printed in large numbers, the cost of production by letterpress and by offset-lithography is about the same. Care should be taken in choosing a printer, for even good photographs grey out and lose depth and distinctness unless they are carefully reproduced. A practical and economical way of utilizing the photo-offset process is to have the material typed to simulate letterpress typesetting, and pasted up to achieve the desired layout. This avoids the cost of typesetting but naturally cannot produce as professional an appearance.

(3) *Silk-screen process:* This is an effective medium for the

reproduction of multicolored pieces in small quantity, particularly posters. It is economical to install, since the equipment consists chiefly of some frames, stencils, and pigments. Most of the work is performed by hand. The necessary skill is easily acquired and the process is therefore often appropriate for use in community projects. Not more than 1,000 reproductions of any one item should be made by this process.

(4) *Mimeograph:* This process is the familiar one of typing and drawing on mimeograph stencils. It is economical and very suitable for news releases, newsletters, and similar material. But it lacks appeal to the eye and in general should be used only when interest has already been aroused by other means.

The use of a second or third color in cover designs can produce excellent and attractive results. Care must be taken that the color scheme is harmonious. Printing in three or more colors is, however, frequently too expensive. A great deal can be done with two colors, especially if white (not counted as a color in printing) is used to achieve the effect of one color and another color is toned to give the equivalent of a third. Too great a contrast between the promise of an attractive cover and the realization of cheaply printed contents should be avoided.

The production of publications of substantial size or in large quantity usually presents budget problems. In drawing up educational programs, appropriate allowance must be made for the cost of publications. When funds are severely limited, careful planning, imagination, and the use of community talent are needed to overcome the shortage. It is wise to canvass local printers, for bargains can often be found among those who specialize in a certain range of printing (such as technical bulletins of a given size) or those who are not fully occupied and are willing to make some price concessions. Consultation with printers in the planning stage of any publication is advisable. Their knowledge of techniques and short cuts in production will often effect savings. If their personal interest in the purpose of the publication is aroused, they may advise about layout, trim the photographs, and perform certain other services without charge.

Newspapers

Whenever possible, community nutrition programs, as well as those operating on a wider scale, should have associated with them one or more people who know the techniques of newspaper publicity.

FOOD FACTS

Fish solves this problem

Let fish solve the day-by-day problem of what to have for dinner. A satisfying fish dish—devilled fish steaks, or some easily steamed cod fillets served with tomato sauce—will make a meal that will get full marks from the family.

BAKED STUFFED FISH

Ingredients: 1½ to 2 lb. fillet of fish, 6 oz. stale bread or crusts, soaked and squeezed, 2 level tablespoons chopped parsley, 1 level teaspoon mixed dried herbs, 1 level tablespoon finely chopped onion, 2 level teaspoons salt, ¼ level teaspoon pepper, 1 level tablespoon browned breadcrumbs, ½ oz. dripping or cooking fat, 4 large tomatoes.

Method: Cut the fish into two pieces and place one piece in a baking tin or shallow ovenproof dish. Beat the bread with a fork until smooth and add the parsley, herbs, onion and seasoning, mixing well. Spread the stuffing over the fish in the tin and place the other piece of fish on top. Sprinkle with the crumbs and dot with the dripping. Arrange the tomatoes round the dish and bake in a moderately hot oven for about 30 minutes.

STEAMED FISH

Suitable for fillets, small steaks and small whole fish. Place the fish on a greased plate, sprinkle with salt and pepper and a few shavings of margarine. Cover with an inverted plate. Place the plates over a pan of boiling water or a saucepan of boiling vegetables and cook for 15 to 20 minutes according to the thickness of the fish. Serve coated with a home-made tomato sauce.

DEVILLED STEAKS

Ingredients: ¾ oz.-1 oz. margarine, 1½ level tablespoons sugar, 2 level tablespoons dry mustard, 1 level teaspoon ground cloves, or 1 level teaspoon mixed spice, 2 level tablespoons chopped onion, 8 thin steaks (about 1½ lb.) or two pieces of fillet of fish, 2 tablespoons vinegar.

Method: Cream the margarine and sugar well together, beat in the mustard, clove or spice and onion and spread evenly on four of the cod steaks. Place the remaining four steaks on top and place in a greased ovenproof dish. Pour over the vinegar and cover with greased paper. Bake in a moderately hot oven for 20-30 minutes.

TOMATO SAUCE

Ingredients: ½ oz. cooking fat or dripping, 1 onion, chopped, 2 or 3 bacon rinds, chopped, 1 bay leaf, sprig of thyme, 4 peppercorns, 8 oz. tomatoes, 2 tablespoons vinegar, 1 level teaspoon flour or cornflour.

Method: Melt the fat and fry onion, bacon rinds, bay leaf, thyme and peppercorns for 5 minutes, and then add the tomatoes and vinegar. Boil gently for 15 minutes. Rub the mixture through a sieve or mash well with a wooden spoon. Return to saucepan and reheat. Mix flour or cornflour with a little water. Add to the sauce and boil for 5 minutes.

Where there's fish, there's a GOOD meal MF

THIS IS WEEK 11—THE THIRD WEEK OF RATION PERIOD No. 3 (September 14th to October 11th)

THE MINISTRY OF FOOD, LONDON, S.W.1. FOOD FACTS No. 377

Newspaper editors who take a public-spirited interest in such undertakings may arrange to have reporters attend the more important events in the program, or will publish accounts of such events supplied by participants.

Copy for local newspapers should be simply and clearly written, preferably typewritten triple-spaced. In a news story, the main facts should be given briefly in the first paragraph, with more detail in the following paragraphs. Names are news, particularly names of local people, and should be used liberally; this recognition also helps to maintain the interest of those participating in the program. Unless devices can be found to keep interest alive, news stories about the beginning of a program may soon give way to routine reports of periodic meetings.

In long-term national programs, it may be possible to arrange for newspapers to print a regular feature on foods. The Ministry of Food in the United Kingdom was very successful in getting wide press distribution for "Food Facts," a regular feature with illustrations and good layout (see reproduction on page 92). The papers carrying the feature reached 10.5 million housewives. A weekly survey showed that on an average nearly half of these were regular readers of "Food Facts"—a remarkably high percentage.[1]

Not every nutrition program has a Ministry of Food behind it, with facilities for furnishing newspapers with illustrated material in a form permitting easy reproduction. But workers in many programs, even in strictly local situations, should be able to furnish newspapers with recipes and household hints that convey information on good nutrition.

Stories

Simple stories may help to promote better eating habits, particularly among children. They should be interesting even though they have a nutritional "moral." Folk stories often reveal prevailing beliefs and attitudes on growth, health, illness, and food, and nutritional ideas can sometimes be woven into stories with this familiar background. A successful story is often repeated over and over in the community, amusing people while it spreads information.

A series of stories about Patsy the doll have been very successful with kindergarten children in the United States of America. The New England Dairy and Food Council prepared these stories, supplied

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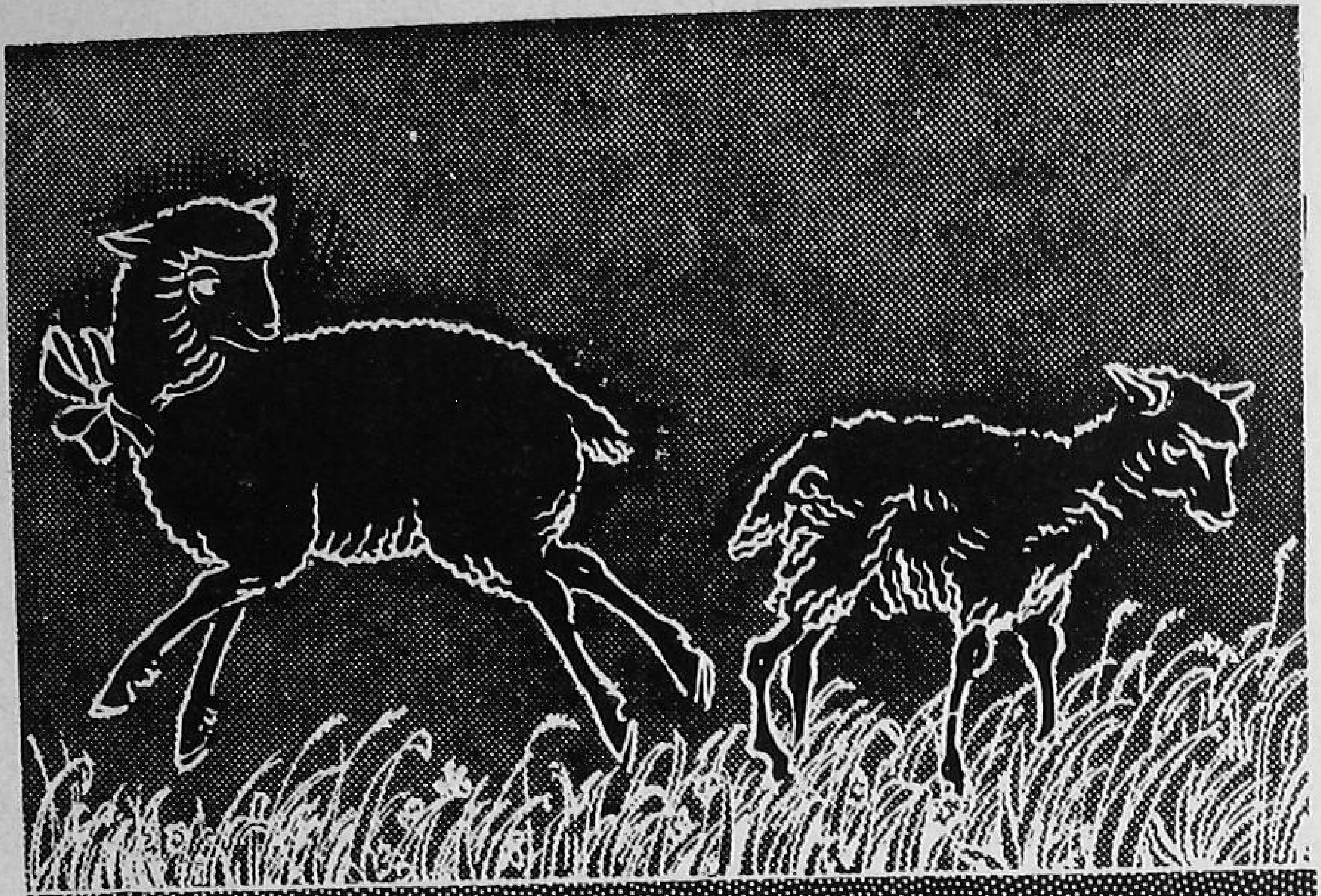
[1] Information on the results of this readership survey was given to FAO by the United Kingdom Ministry of Food, London.



ΤΑ ΔΥΟ ΑΡΝΑΚΙΑ

Ο Ἀντώνης καὶ ὁ Κώστας ξεκίνησαν ἀπὸ τὸ πρωὶ γιὰ τὸ κτῆμα τοῦ παπποῦ. Εἶναι καιρὸς τώρα ποὺ τοὺς εἶπε πὼς θὰ τοὺς χάριζε ἀπὸ ἕνα μικρὸ ἀρνάκι. Τὰ δύο ἀδέλφια δὲν ἔβλεπαν ἀπὸ τότε τὴν ὥρα ποὺ θὰ πραγματοποιοῦσε ὁ παπποὺς τὴν ὑπόσχεσή του.

Βαδίζοντας τὸ στενὸ δρομάκι ἀνάμεσα στὰ καταπράσινα χωράφια ἔφθασαν σὲ λίγο στὸ κτῆμα. Βρῆκαν τὸν παπποὺ νὰ κάθεται κοντὰ στὴ στέρνα. Στὴν ἀγκαλιά του κρατοῦσε δύο

Two Little Lambs—a story illustrating good nutrition, devised for Greek school children. For translation, see Appendix IV.

a "Patsy doll" on loan with all the necessary materials, such as clothes and food models, to enable children to act the stories as parents and other members of Patsy's family. In acting Patsy's day with her, they get an idea of how their own day should be spent. Older children and teachers could themselves make most of the "props" for use in the school kindergarten.

A type of story suited to slightly older children is illustrated by the tale, *Two Little Lambs,* a page of which is reproduced on page 94. (For translation see Appendix IV, page 147.) The story was written by a member of the Nutrition Services recently established in Greece with the help of FAO. It was published as a leaflet and distributed to every third-grade child in the country. Reading material is scarce in Greece and the children were pleased with a story leaflet they could keep, take home, and read to their families. In this way, the story reached many adults.

Posters and Charts

Three types of teaching posters and charts were described on pages 65-66. The first type, which contains a single simple idea, must be bold and clear so that the point is obvious at first glance. It is suitable for exhibition in public places without an accompanying lecture. Illustrations of this kind of chart are shown on page 96. These examples also show how a simple poster can be adapted to fit the food habits and surroundings of another country. In areas where a high percentage of people cannot read, the message should be wholly conveyed through the picture.

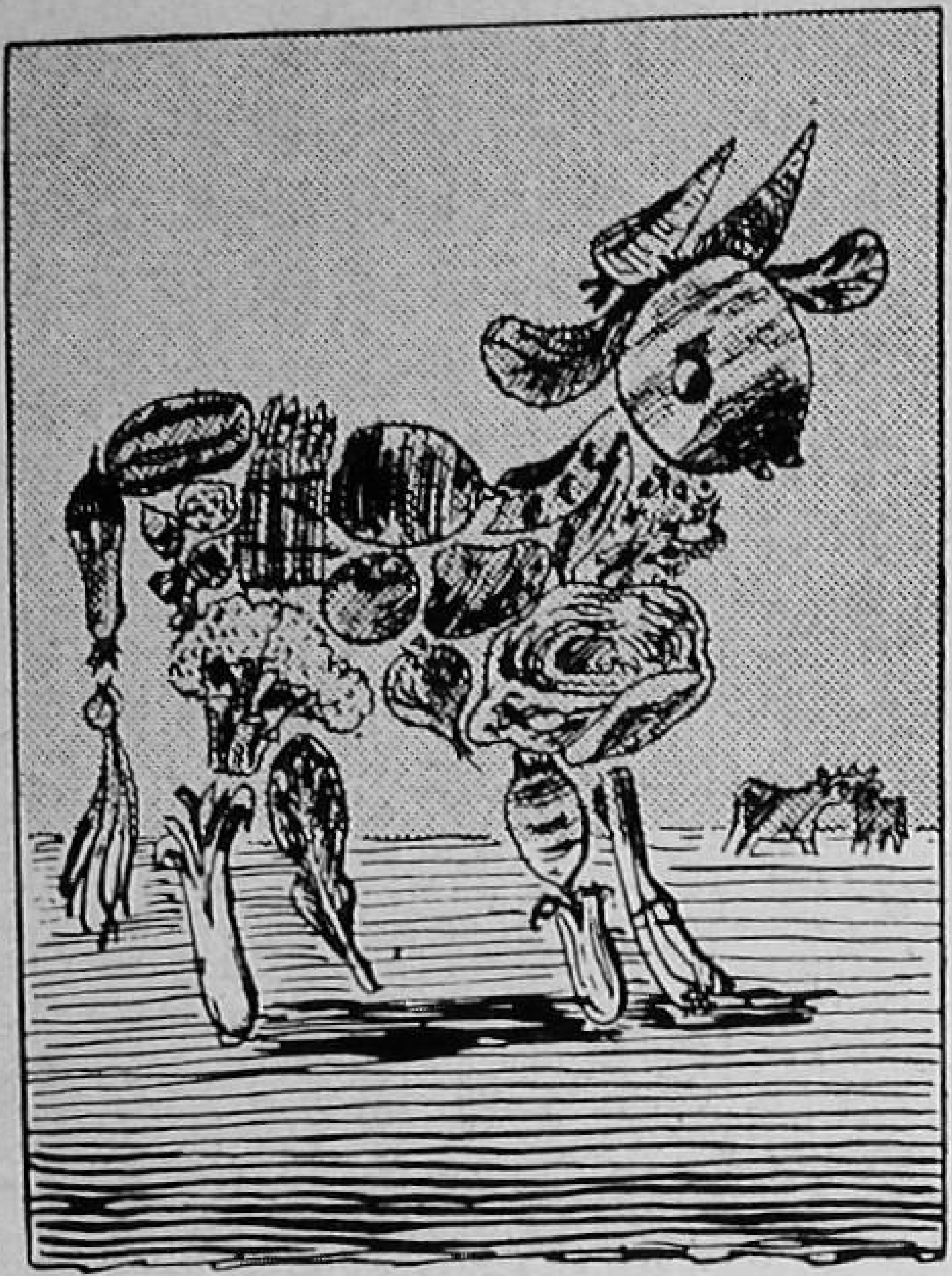
The second type of poster or chart attempts to interpret scientific facts in a popular way. Good examples of this type are shown on page 97, where foods are grouped according to the nutrients they contribute to the body. Charts of this kind should be accompanied by a simple explanation. The method of classifying foods into several groups and teaching the selection of some from each group every day (described on page 11) can be illustrated by pictures of the foods drawn on different colored segments of a circle. In countries where most people eat a few staple foods and do not have a wide selection, teaching charts might more suitably demonstrate the addition of a few important foods to the basic diet.

The homemade Chinese chart shown on page 98 tells a simple story. It could be used to illustrate a talk or interview.

The third type includes graphs and charts which give more detailed information, often in abstract form. Conventional line graphs like those appearing on page 99 are more suitable for use

in training courses than in teaching the general public; they may, however, be of value in teaching high-school children. Other types of charts include "bar graphs," in which bars of various lengths represent different quantities, and pictorial graphs (see page 100), in which symbolic drawings or things are used to represent quantities or numbers.

Illustrated charts or graphs have more appeal than long lists of words or figures. Complicated concepts can be illustrated simply by this means, but care must be taken that the process of simplification does not result in inaccurate and misleading representation.



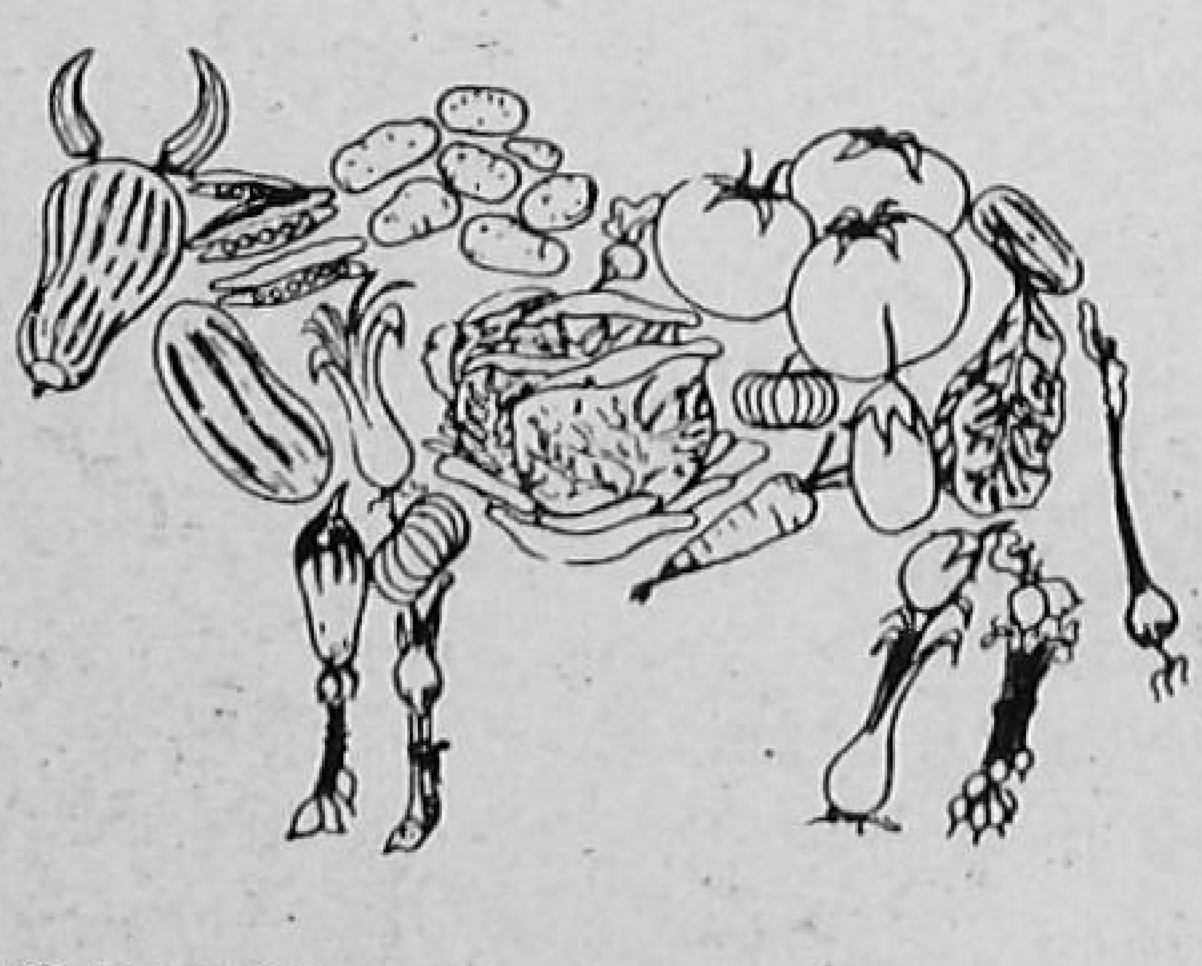
The Vegetabull

A United Kingdom poster in an "Eat More Vegetables" campaign.

Making charts and graphs. Colored charts are more attractive than black and white and are sometimes easier to understand. It is wise to get advice from someone who has technical knowledge of graph-making before trying to prepare home-made ones. If copies of charts are needed, it is often easier to photograph

THE VEGETABULL!

For Vigour and Pull



GROW AND EAT MORE VEGETABLES

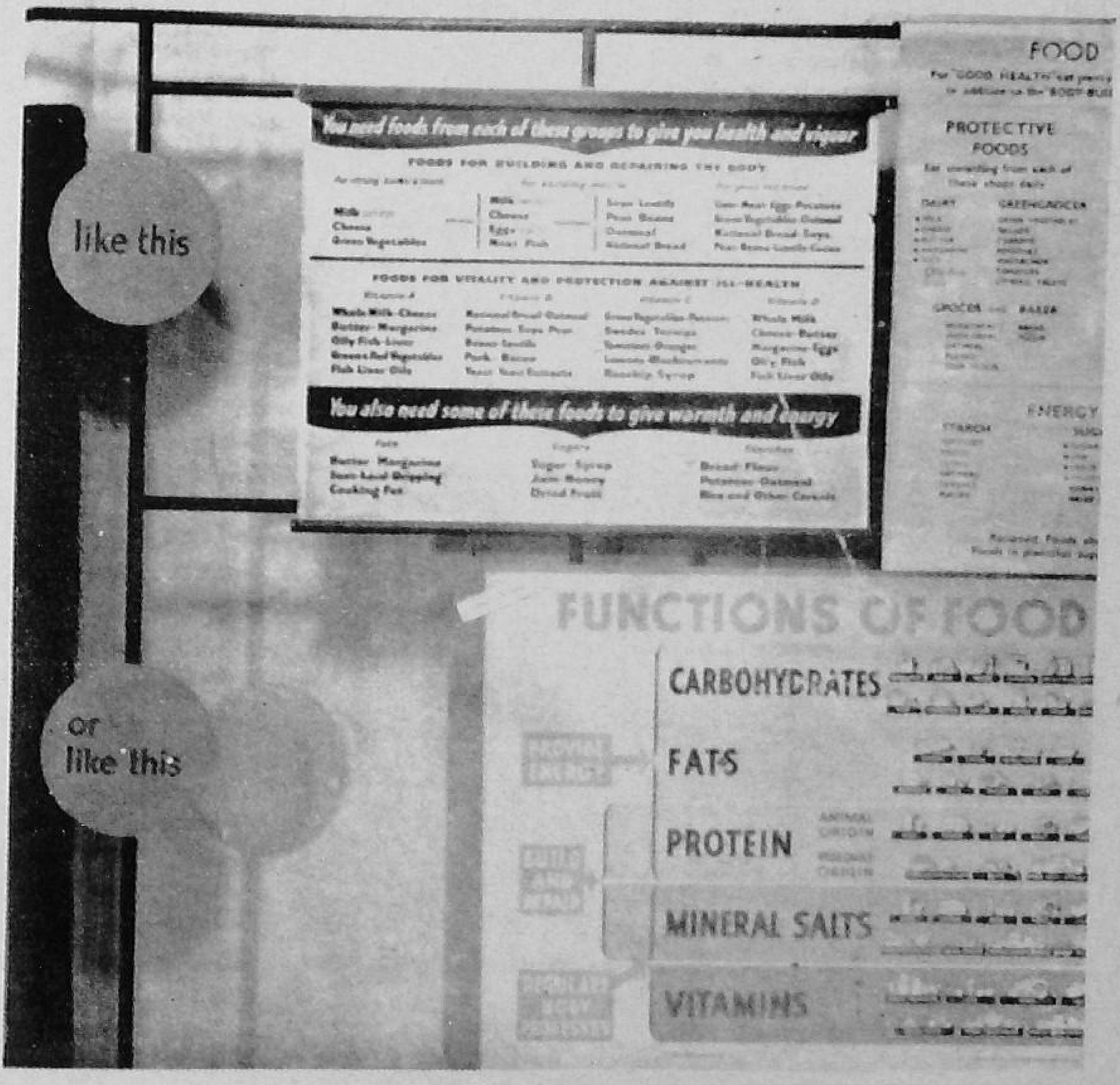
An Indian adaptation of the English "Vegetabull" poster above, designed to suit the local scene.

them than to print or redraw them. Photographs of charts with dull surfaces can be colored.

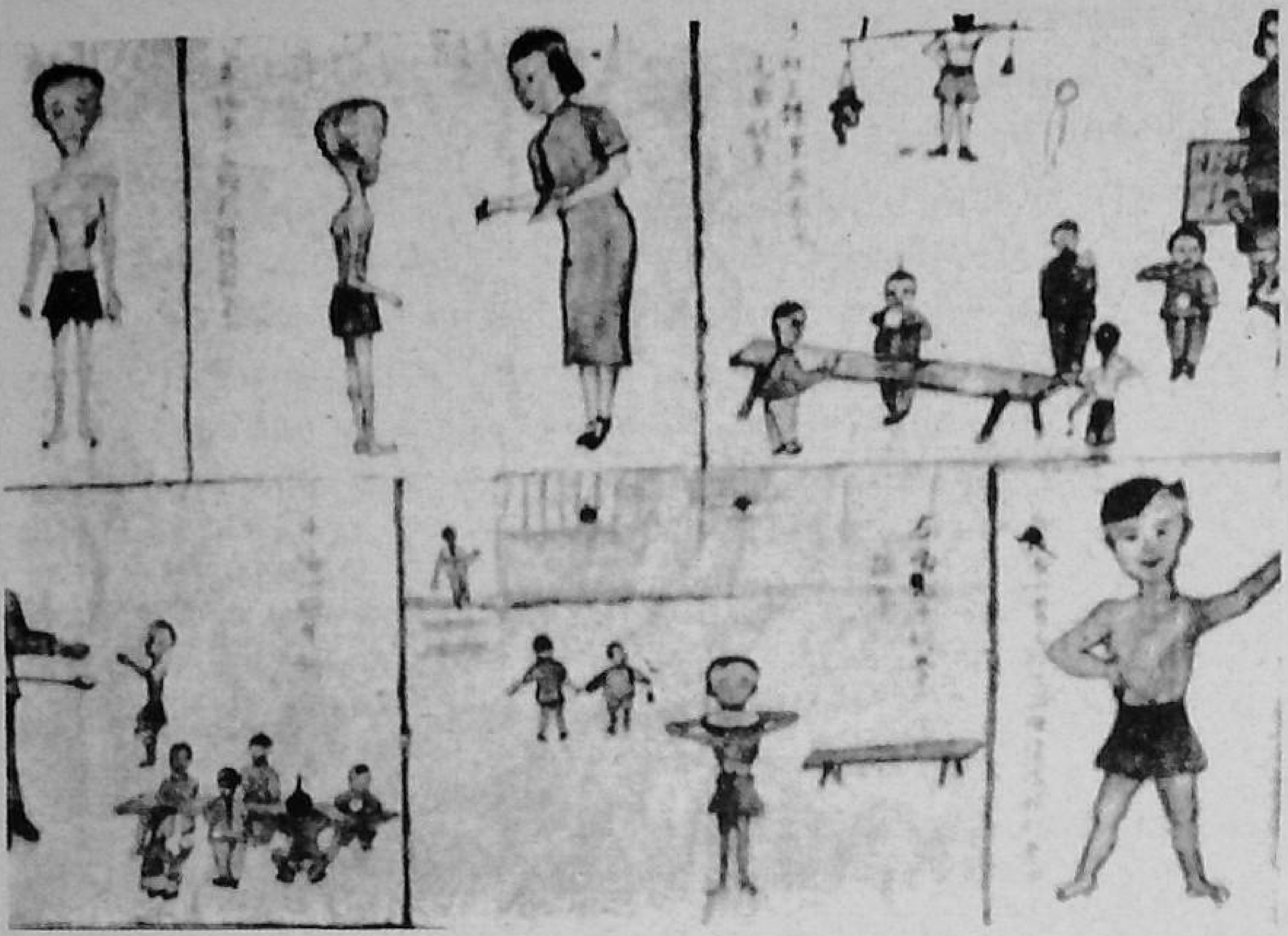
Variations on picture charts, such as those described below, are often useful for teaching purposes.

(1) Colored ribbons or strips of paper passed through slits of cardboard. These can be lengthened or shortened by the lecturer to illustrate variations in quantity.

(2) Charts made of sticks or blocks. Round sticks of different colors, cut to appropriate lengths, can be fitted upright into holes in a board. Solid blocks can also be used to give a graphic representation of degree or magnitude. In using volumetric presentation, the blocks must be



Several ways of illustrating food groupings for teaching purposes. Photograph by courtesy of the Ministry of Food, London.



A nutrition chart used by the Agricultural Research Station at Shih Chia Chuang, Shansi Province, China.

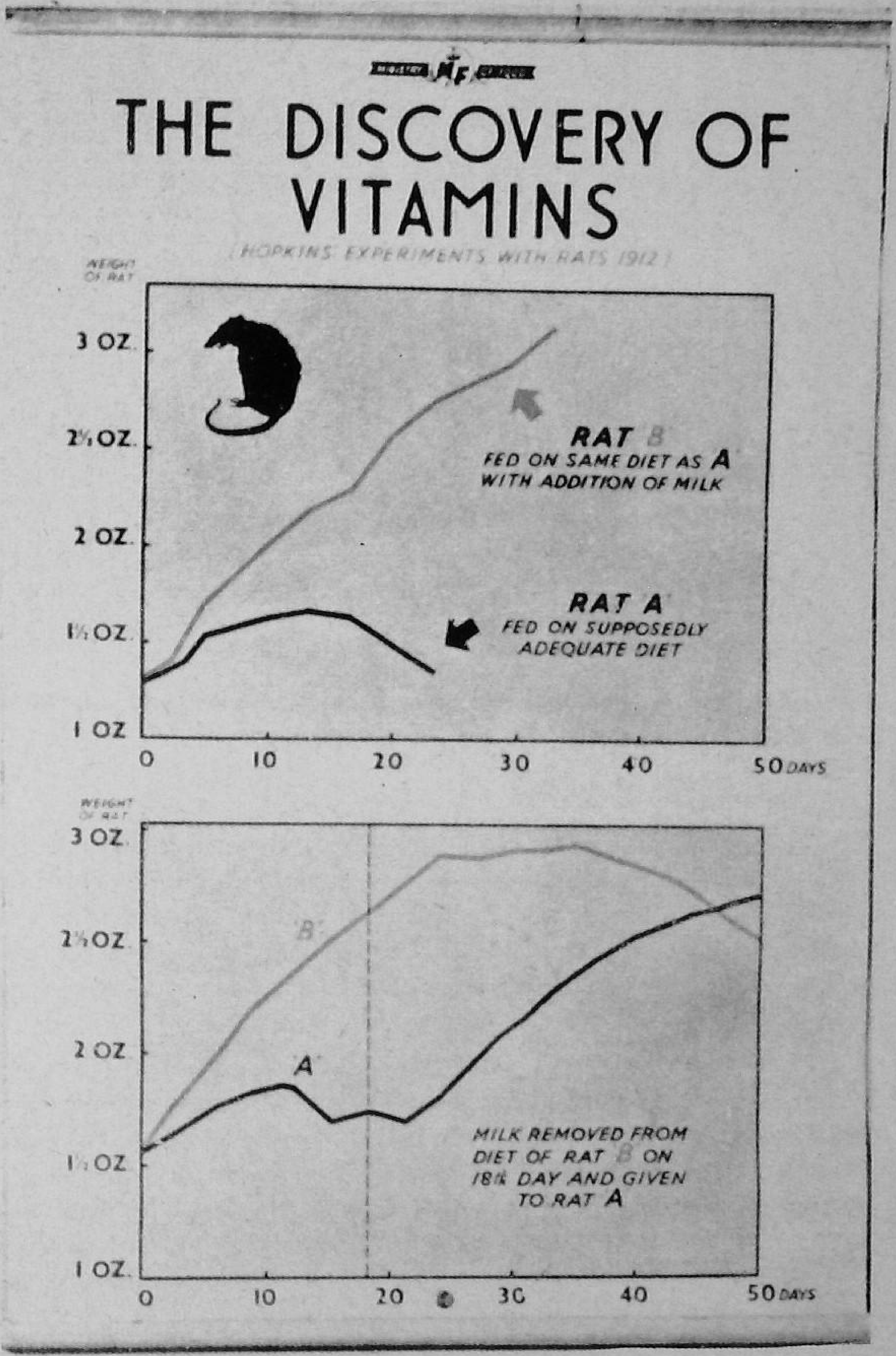
Photograph by courtesy of Kay Beach, American Friends Service Committee.

accurately prepared by volumetric measurements, otherwise a distorted picture is given.

(3) Pieces of felt of different colors stuck on a thick rough felt background. Because of the hairy surfaces, they adhere even in a perpendicular position. This provides a useful kind of wall chart which can be changed during the lesson to illustrate various points.

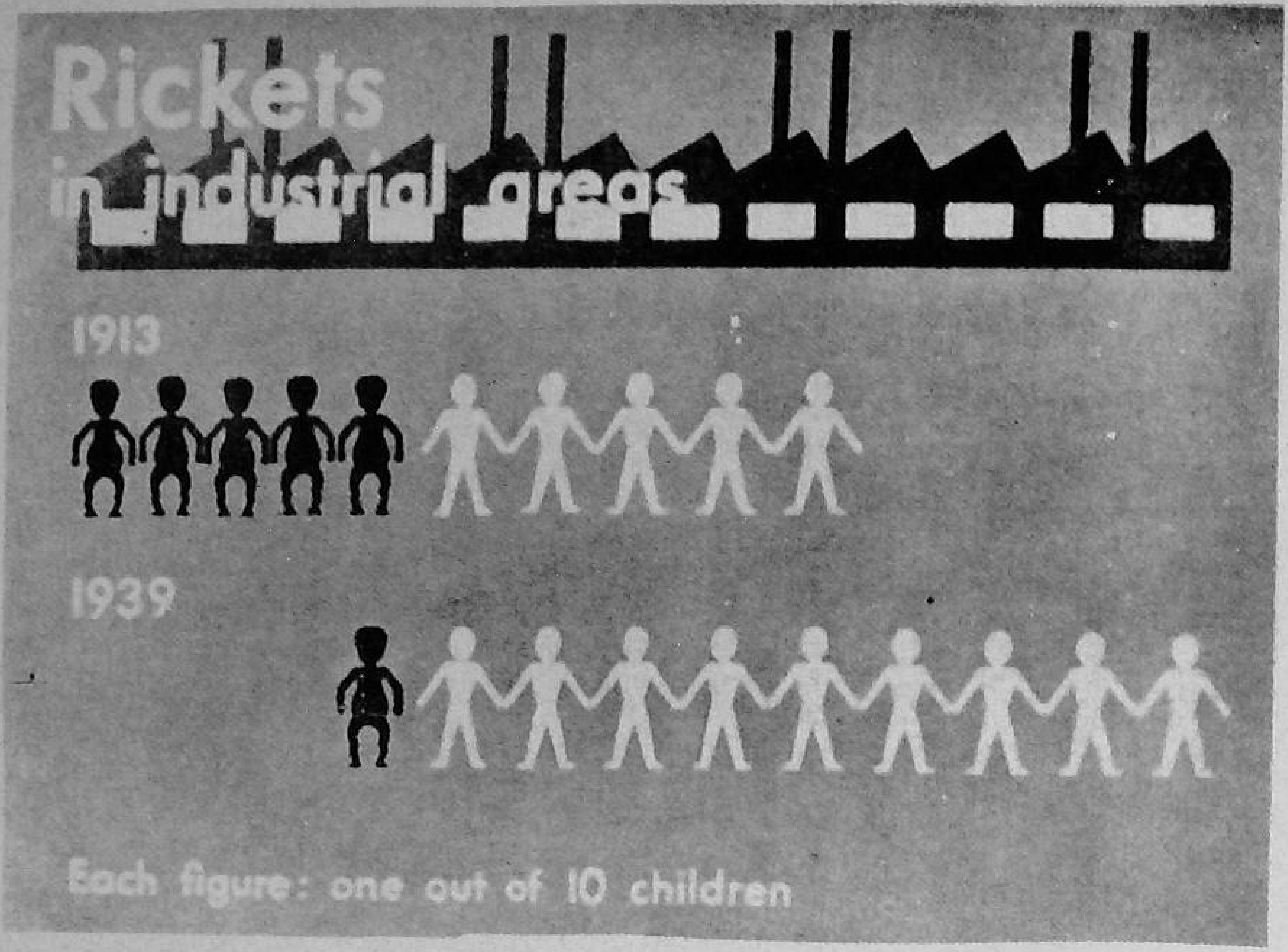
Radio Scripts

Radio programs on nutrition should have popular appeal and simplicity. As with most forms of public education, association with familiar things makes it easier for people to apply the message to their own situation. Interviews or discussion panels with farmers or housewives have been found to have more popular appeal in some countries than straight talks. In preparing broadcasts, local people who know the interests and special problems of the area should be asked to help. They understand the tastes of the people, and their participation arouses their own interest as well.



A line graph illustrating Hopkins' epoch-making discovery. It shows the improved growth of young rats when milk is added to their diet.

Photograph by courtesy of the Ministry of Food, London



A pictorial graph designed by Mrs. D. M. Lubbock and reprinted from *Food and the People* by Sir John Boyd Orr.

If it is possible to build up a popular radio personality, people will believe what he says and quote him as an authority. This fact is exemplified by the response to a program dealing with nutrition and health which was broadcast in the United Kingdom during the war by the "Radio Doctor." An excerpt from one of his scripts is given in Appendix V, page 148.

The radio interview is often more effective than the straight talk in interpreting and simplifying subjects of a scientific and technical character. The interviewer can ask the speaker to repeat a point for emphasis or to rephrase a statement or define a term for clarity. In other words, he can ask questions which the layman might ask if given an opportunity to discuss the subject with the speaker. Further, the views and impressions of local people familiar to the audience can be presented through radio interviews.

Films

The making of films is a highly technical and usually expensive business. Nutrition educators who have ideas for nutrition films should get in touch with their government film unit or an independent

film producer. Amateur movies cameras, however, can often be used to record interesting work or events associated with a nutrition program.

Simple rules for selecting films. Workers who need some particular type of film for a training course or meeting should write to whatever department of their government is concerned with the distribution of educational films, giving full details and asking for information on available films. If no suitable films are available in their own country, it is often worth while to write to departments in neighboring countries. Catalogues of nutrition films are now available through some international agencies.

Before ordering a selected film from the distributor, workers should find out the exact terms and conditions of rental. They should remember to order the size of film (usually 16 mm.) which will fit their projector. Sound films should not be ordered when only a silent projector is available.

The film should always be screened before it is publicly shown. It may be totally unsuitable to the purpose required. The lecturer should also become thoroughly familiar with the content of the film. He should find out if there is an accompanying teacher's guide or discussion manual.

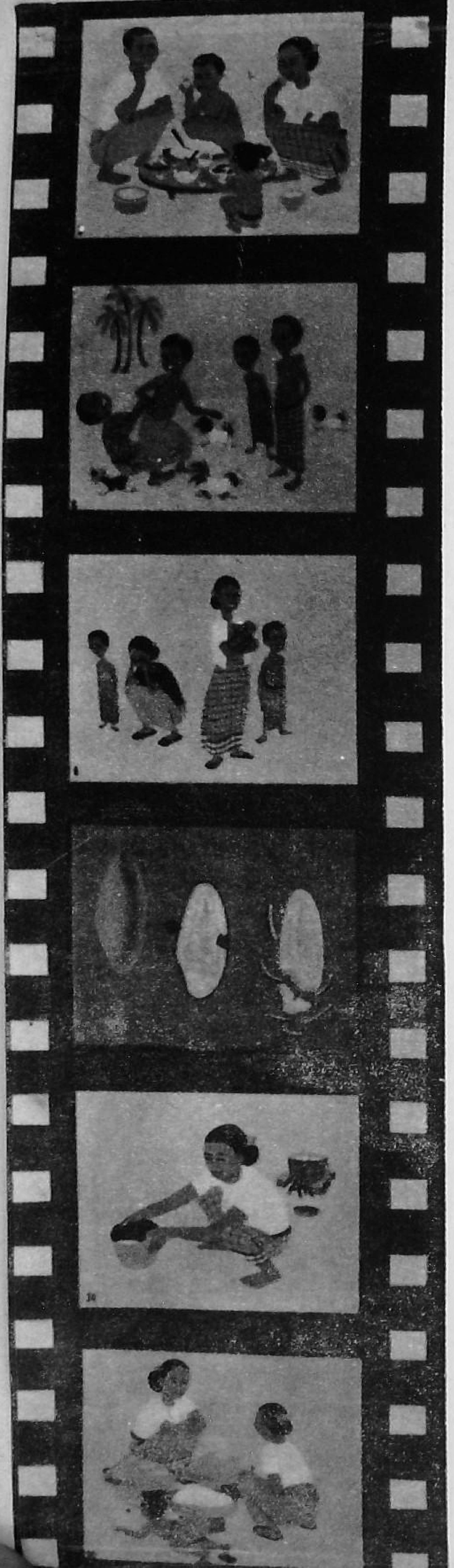
Short films lasting not more than 15 or 20 minutes are generally best for public education. Cartoon and color films are often more interesting even to adults than ordinary black and white films, and they are certainly more interesting to children. It is nearly always desirable to show a film more than once in the course of an educational program.

Films must be treated with great care. Prints are very expensive and can be ruined by bad handling. An experienced operator should always be used.

Film Strips

A number of frames (pictures) from a film strip, *Rice and Health*, are reproduced on pages 102 and 103 to illustrate this type of teaching aid. It is a cartoon-type strip in color, prepared by FAO to help in teaching rice-eating people of Southeast Asia how to improve their diets. Color was used because it has been found to give a better sense of dimension than black and white. The full length of this strip is fifty-eight frames, which makes it somewhat too long for direct exhibition to the public. It was prepared for use in teaching leaders, workers in child-feeding centers, or people with some profes-

RICE AND HEALTH



Rice, eaten with plenty of other foods, is a solid foundation for family health.

A family's health can be judged by the children. Healthy children have abundant energy.

The right kind of food can mean life or death, health or sickness for a family.

The rich parts of rice are the brown lining under the husk, and the seed germ. Undermilled rice is the most nutritious.

The rice should be cleaned first by picking out dirt, washed gently, and cooked in as little water as possible.

Soybeans, peas, beans, and groundnuts are cheap foods for a family, and have plenty of proteins and B vitamins.

RICE AND HEALTH

Green leafy vegetables and fruits are rich in vitamins A and C and often in calcium and iron.

Families with a patch of ground should grow their own vegetables in order to eat better and save money.

Fish add proteins and vitamins to the diet. Fish-liver oils are the richest sources of vitamins A and D.

Many families can keep a few hens. Eggs provide proteins, calcium, and many vitamins.

To provide better food for all families, FAO tries to get abundant harvests from farms and fisheries everywhere.

Rice alone is not enough, but rice with plenty of other foods is a solid foundation for family health.

sional training. It can be used in parts, a few frames for each lesson, the strip as a whole being used at the end to review the teaching. Some of the simpler frames could suitably be used as a film strip for popular audiences.

Film strips can be made by photographing living scenes and actual things or by photographing writing, drawings, charts, graphs, or other representations. The same, of course, also applies to lantern slides. They can be colored or black and white, according to the type of photographic film used. It is cheaper to photograph people or actual scenes than to make a strip that requires professional art work. However, useful film strips have been made from children's drawings of their own activities. If film strips are made for an area in which several dialects or languages are spoken, no writing should be used on the strip itself.

The story should be logically developed, and a simple explanation of each picture should be given by a teacher. It is important that the teacher himself describe and discuss the picture, even if the strip contains written explanations. A guiding script should be written for each strip or series of slides, telling the story; this should not be read verbatim as a lecture but should be adapted by the teacher to his audience.

Models

Food models may be used to illustrate a lecture, exhibition, or demonstration. They may also be used in games in which children choose foods needed to provide a good diet for the family. The models should depict familiar local foods. For example, American Indians accustomed to growing and using red maize are not impressed by a demonstration in which models of white maize are displayed.

Making Models. Models made by people in an area are usually better for teaching purposes than those produced by an outside worker. Sometimes excellent food models, intended as ornaments but suitable for teaching, can be found in local markets. In some Guatemalan towns, for example, the market stalls show a rich variety of model fruits and vegetables.

The models needed can be made from potter's clay, wax, wood, or plaster or cut out of cardboard or felt by the nutrition workers, teachers, or pupils themselves. They should be copies from samples of real foods. When members of a class provide the samples, their selection may be of help to the nutrititionist in learning which varieties of foods are used locally, how they are prepared, and what their local names are. Fresh foods may also be used instead of models in exhibits and demonstrations.

Nutrition Exhibits and Exhibitions

Nutrition exhibits, whether used singly in a clinic or lecture room or combined to form an exhibition, should be simple and attractive in color and design. They should, if possible, convey some new idea or present a problem and its solution in an original way.

In planning an exhibition, a knowledge of the home life, daily activities, and popular forms of entertainment in the region is necessary. The event should be well publicized in advance, and the physical arrangements should be carefully planned. An exhibition

Demonsrtations in the ante-natal clinic of University College Hospital, London.

Photograph by courtesy of the Ministry of Food, London.

should be set up so that there is plenty of space and no crowding around the booths and stands. Good lighting is important. The exhibits should be at a level at which they can be conveniently seen, and they should be orderly, fresh, and undamaged. Flowers, banners, and music will help to attract people.

The emphasis should be on tangible objects rather than on

printed information. Captions should be clear and concise. Miniatures always attract attention. Both children and adults enjoy looking at a miniature farm, school, or home. The audience should, when possible, be given something to do. Working models are popular but expensive. But even lifting a flap to see what is underneath gives people a sense of participation, and participation creates interest.

The best staff available should be assigned to the booths to provide intelligent answers to questions put by the public. Local people can be used for this, even in a mobile exhibition, if they are carefully briefed beforehand. Reliefs should be organized, for answering questions is very tiring. Materials for people to take home from the various stalls should be provided when possible.

In the experience of the Government of India,[2] the following features have proved especially effective in nutrition exhibitions organized in that country: small-scale models of food ration shops or industrial canteens; large-scale exhibits of practical vegetable-growing, with actual farm tools and machinery and photographs or models demonstrating irrigation methods; lectures; demonstrations; films accompanying the exhibition; special sessions for school children; a woman's section where women can ask questions uninhibited by the presence of men; a milk bar and a restaurant where the public can eat the foods recommended in the exhibition; a day nursery where mothers can leave their small children.

A traveling health exhibition which gives prominence to nutrition has been designed by the New Zealand Department of Health.[3] This exhibition, which weighs in all about 4.5 tons, is stored in a depot in Wellington and transported about the country by rail. It consists of a number of three-sided bays which can be folded flat for transport. When the exhibition is set up, the shelves are quickly bolted into place, water-paint repairs are made when necessary, and stands for displays are added.

The story of a health subject is told simply in each bay. Displays directly concerned with nutrition include the following: the value of milk; diets for adults and for children of different ages, including infants and pregnant and nursing women; the school lunch and its importance; substitutes for oranges; sources of various vitamins; the cooking of vegetables; anemia; goiter. Among other subjects for

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[2] A detailed description of the Food and Nutrition Exhibition of the Food and Agriculture Departments of the Government of India was published in *Food and Nutrition*, No. 31-34 (July-October 1947), Department of Food, Government of India, New Delhi.

[3] Information supplied to FAO by the New Zealand Department of Health, Wellington.

displays are tuberculosis, dental caries, and parasitic infestations. Both food models and fresh foods are used. As much movement as possible is introduced; for example, there is a revolving turntable in the vegetable display. Films and film strips are shown as part of the exhibition. Leaflets are distributed at each section. A team of four, including a dietitian, travels with the show. The district staff is brought in to help in answering questions.

The exhibit is advertised widely through talks, the press, the cinema, and posters. Invitations for the opening night, at which the local mayor usually speaks, are sent to influential people and to clubs and societies. School children visit the exhibition in groups, see the films, and are given leaflets for future study in school. In the evening short health talks are given to adults. The exhibition stays two to four days in each town. It has been found that a two-weeks' tour is the maximum the team can manage without becoming exhausted.

Puppets

Glove puppets can be made inexpensively to represent the characters in an educational play. They should be durable enough to stand wear, yet light enough so that they do not tire the wrists of the performers and can be easily handled. A simple method of making puppets recommended by the Educational Supply Association, Ltd., London, is based on many years of experience with children.[4] The puppet stage can be made of folding wooden frames or boards, covered with cloth.

Demonstration Animals

The animals selected for teaching purposes should be animals that can be procured cheaply, that are easy to care for and handle, and that come from a strong and healthy stock. Small, rapidly growing animals are best since they respond quickly to changes in diet.

The animals should be attractive enough to have popular appeal. They should not, however, be the types that are usually kept as pets, for this tends to arouse too much sympathy for the badly fed ones. Different animals are prized in different cultures. In some countries it would be considered cruel to use dogs for demonstration purposes, but there would be no objection to rats. In others,

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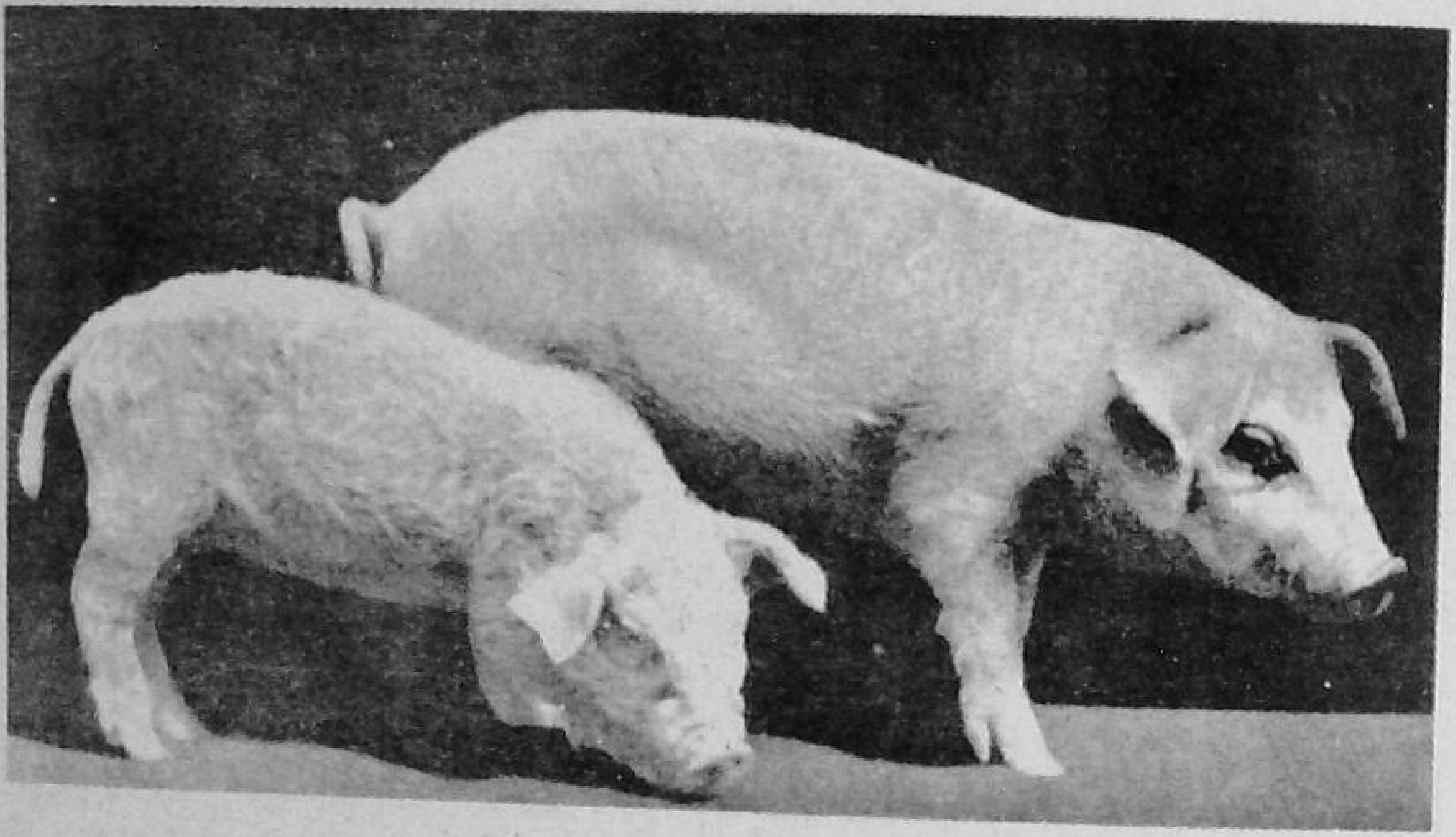
[4] *Making Simple Puppets.* The Educational Supply Association, Ltd., Esavian House, 181, High Holborn, London, W.C.I.

rats may be regarded as disgusting, but guinea pigs or chicks would be acceptable. When rats can appropriately be used, they are particularly suitable as they are small and grow rapidly and their food requirements resemble those of human beings. White rats can often be easily obtained from local biological laboratories. In demonstration experiments, at least two rats, preferably a male and a female,



Animals can be used to demonstrate good nutrition. The big pig had milk, the little pig had none; otherwise they both ate the same feed.

Photograph by courtesy of the National Dairy Council.

should be fed on each experimental diet. Well-fed animals on a normal diet should always be shown for purposes of comparison.

The laboratory supplying the rats will probably be willing to advise on the care and feeding of the animals and on the equipment needed. Home-made rat cages can be built from galvanized wire screening of about 0.5 inch (1.25 cm.) mesh. Detailed information on how to make rat cages and on the care and use of white rats in demonstration experiments is given in *Teaching Nutrition to Boys and Girls* by Mary Swartz Rose. (See Additional References to Chapter IV, page 83.)

Chapter 6

EVALUATION

EVALUATION OF METHODS

In a program of education in nutrition, efforts should be made to assess the results and the effectiveness of methods and teaching materials. To do this, some early evaluation of conditions is needed to establish a benchmark against which future progress can be measured. Through such evaluation, workers and communities can have the satisfaction of learning that their efforts are succeeding, and this assurance is important if the program is to continue and expand. Moreover, it can help to keep the program on useful and practical lines.

Progress can be assessed either by formal research or by less formal means. The methods chosen should depend on what is to be evaluated and on the facilities and skills available in the community. In more formal evaluation expert advice should be sought, for specialized knowledge is needed to choose procedures that are reliable, objective, practical, and simple, and to apply valid sampling techniques.

Account can be taken of improvements in knowledge and changes in attitude, but these should not be overemphasized. The basic criteria are action and changes in behavior, which should be the real aim of any nutrition program. Evaluation should be made at intervals long enough to allow for changes.

What to Measure

It is obviously desirable to select for measurement improvements which are of major importance and which apply to the majority of the people in the community. In selecting criteria for measurement, the following points may be considered:

Are the changes which it is proposed to measure really beneficial and clearly a result of the nutrition education program?

Is there likely to be concrete evidence of the change, susceptible to measurement? In what terms should such evidence be measured—in terms of the number of people making a change or in terms of the average amount of change made? For example, would it be better to count the number of people starting gardens or to estimate the additional quantities of food produced as the result of encouraging gardening?

Is the measuring technique selected satisfactory? The answer to this question must often be sought by preliminary testing on a small scale.

What plan of sampling is best if all families cannot be included? Misleading conclusions are often drawn from studies carried out on a sample that does not represent the whole area. Samples must be selected scientifically and expert advisers needed.

Which are the best methods of collecting and analyzing the information, and what use will be made of it?

The Method of Measuring

Techniques should, as far as possible, produce objective answers which do not depend too largely on the skill of the field investigators or the workers who interpret the data. The method used must not be too time-consuming or expensive and must be easy to understand and interpret. A common method is the questionnaire. If this is used, each question must be worded in a way that leaves no room for ambiguity and must be so designed as to produce an answer that is really informative. The questions should follow each other in logical order and should not be "leading questions." Questionnaires can be used to reveal opinions and attitudes or collect factual information, such as the number of livestock a family owns or the amount of fruit canned during the year.

A more objective method of measuring is that of keeping numerical records, e.g., records of sales of certain foods in grocery shops or of the heights and weights of children. The success of a nutrition and health program in a school can be evaluated, for example, by measuring gains in weight and height, improvements in posture, the decrease in illness, and changes in food intake and eating habits. More detailed evidence can be supplied by clinical, blood, and parasitological investigations if specialists are available to make them. The objective evidence obtained by these means can be supplemented by questionnaires and other tests which show the attitude of the children toward nutritious foods, the amount they have learned

about them, and the actual changes which have occurred in their diets.

Data from records and answers to questions can be tabulated and the results compared with those of the previous year. Comparison with control groups may be made. Descriptive reports of changes are also of value.

The evaluation of methods is illustrated by the following examples. It should, however, be emphasized that, in many countries, simpler techniques of evaluation than the ones described here are likely to be more appropriate in practical programs.

In Massachusetts, U.S.A., a study has been made of the effect of two teaching methods on the food habits of school children, using as a criterion the selection of lunches in the school cafeteria.[1] The subjects studied—850 junior high school pupils of approximately 12 to 14 years of age—were divided into a lecture group, a discussion group, and a control group. The lecture and discussion groups were given the same information by the same nutritionist. In the discussion group, however, prejudices and difficulties were discussed and suggestions were made by the group. The decision to improve the choice of lunches was suggested by the teacher but was restated and made explicit by the group. The control group received no teaching.

Records of the selection of food by individual students were obtained through questionnaires given to the students in their classrooms. These were made, first, before the teaching began and again on the following day, two weeks later, a month later, and two months later. The nutritional value of the lunches was judged on the basis of the milk, other foods containing animal protein, fruits, vegetables, and dessert which they contained. A sample of the replies was checked against cafeteria sales and by comparing the lunches bought by a sample number of individual students with the students' own questionnaire reports for that day. In the last questionnaire, students were asked what they considered necessary for a well-balanced lunch and what they had learned from the lecture or the discussion lesson. Analysis of the results showed that the discussion-decision technique was more effective than the lecture alone in encouraging these students to choose better lunches.

In Richmond, Virginia, U.S.A., a series o fquestions were asked of urban housewives in 1947 to determine the comparative effective-

[1] Marian Radke, *Report on Study of Food Habits of Junior High School Students at School Lunch and Methods of Influencing Food Habits*, Research Center for Group Dynamics, Massachusetts Institute of Technology, Cambridge, Mass., U.S.A. (Unpublished, undated.)

ness of various methods and incentives used in a community nutrition program.[2] They were designed to bring out the following information:

(1) Their knowledge of nutrition and their attitudes towards different educational methods that were being used in the community to improve their food habits.

(2) The effectiveness of various media in disseminating knowledge of nutrition.

(3) The incentives to improve food habits which appealed most to these women.

The sample studied included 400 women selected by a valid statistical technique. The questions were always asked in the same order, and the women were given an opportunity to talk freely about any problem. The answers were recorded as accurately as possible, and the data were classified under three general headings similar to those given above. Briefly the conclusions were as follows:

Fifty percent of the homemakers had little or no knowledge of what constitutes a good diet and only 4 percent had satisfactory knowledge. About half of them selected an adequate diet. The women were interested in food preparation rather than in nutrition.

Most of them had newspapers, magazines, or radios in their homes, and the majority said that they got their ideas on food and nutrition largely from these. About half of them had heard of nutrition classes and meetings, but only one-sixth had ever attended one. Most of the rest had found it inconvenient to attend. One-third of the women had attended nutrition and cookery classes at school, and most had found these classes helpful. Some women had learned something about nutrition through their children's experience at school, and about 90 percent had received some information on the subject from some source.

Eighty percent were finding it difficult to feed their families, largely because of the high cost of food. While most of them stated that additional knowledge would help, it was evident that a successful appeal could not be made on the grounds that their families did not have the right kinds of food to eat, as 80 percent believed that they were already serving the right sort of meals. The strongest incentives towards the improvement of nutrition appeared to be the good health and growth of children and a healthier and longer life for the family.

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[2] United States Department of Agriculture, Bureau of Agricultural Economics. *Homemakers Acceptance of Nutrition Information in an Urban Community*, Washington, D.C., 1948. (Unpublished.)

EVALUATION OF MATERIAL

It is important to evaluate the effectiveness of teaching materials so that their quality can be continually improved. Little systematic work on this subject has been carried out. Commercial companies can evaluate their advertising materials by the effects on sales, but teaching materials do not ring a cash register. To make a really scientific comparision between samples, a specific experiment or series of controlled observations is needed which measures the effects of the different materials on groups of people when all other factors are identical.

Efforts have been made in a few countries to evaluate some teaching materials. The United Kingdom reader surveys on food facts (see page 93) and its listening surveys on "kitchen front" broadcasts such as those of the Radio Doctor (see page 100) may be cited as examples. So also may the tests that have been made in Canada in recent years. In 1947 the Nutrition Division of the Canadian Ministry of Health and Welfare began to evaluate the usefulness of all material produced by the Division.[3] A brief description of some of its procedures is given here.

Evaluation before Production

It is the policy of the Nutrition Division to meet twice a year with all provincial nutritionists, who are asked at these meetings to comment on recent educational publications and to state their needs for new material. After the discussion with the group, the Division draws up a draft of material for which a need has been expressed and sends it to each nutritionist for comments. A final draft is then prepared and submitted to the nutritionists, who are asked to estimate how many copies they will need. In making this estimate, each nutritionist canvasses the requirements of her provincial Departments of Health, Education, and Welfare, and of private agencies. This procedure enables the Division to produce suitable material in amounts corresponding with the demand.

Evaluation after Production

A study of each new piece of material is made to find out what effect it has on the group for which it is intended. For example, a

[3] L. B. Pett, *Nutrition Education in Canada*, notes prepared for the use of the Food and Agriculture Organization of the United Nations by the Nutrition Division, Department of National Health and Welfare, Ottawa, 1948.

large evaluation project on a poster entitled "Eat Vegetables Every Day" was conducted in the spring of 1947. Through the co-operation of the provincial nutritionists, this investigation covered 2,000 pupils in eight school grades (pupils up to approximately 13 years of age) in each province of Canada.

The aim was to ascertain whether children learn anything from a poster left in the classroom for three days without their attention being drawn to it and without any instruction being based on it. The pupils recorded their meals for one week before the poster was exhibited and again for a week after the poster was removed. The day after the poster was taken down, a questionnaire designed to discover its effect was answered by each pupil.

Although results were not at all startling, it was found that 35 percent of the children reproduced the information written across the poster—"Vegetables should be eaten every day"; 10 percent of them were able to reproduce the information written in smaller print—"A potato and two other vegetables should be eaten every day." In answer to a general question in the questionnaire which did not specifically mention vegetables, 13 percent of the children said that they ate more vegetables. The food records showed a 47 percent improvement in the consumption of vegetables. Since records were kept for all food eaten, the children had no way of knowing that only the records for vegetables would be tabulated.

Office Exhibits

Small nutrition table displays are exhibited at regular intervals in the offices of the Department of National Health and Welfare. These are aimed at a specific group and designed for a specific locality. The exhibits are left for three days in various divisions and then questionnaires regarding their effectiveness are filled in by the office members. The information so obtained, together with a photograph of the exhibit and a note on the size, color, cost, etc., is sent to provincial nutritionists, who may copy the exhibit if they consider it worthwhile. The small cost of these displays (each approximately $2.00) makes it possible for small health agencies to reproduce them for local use.

As a result of these studies, the following conclusions have been reached by the Nutrition Division in Canada: Much attention must be given to education psychology. It is not enough to present facts; they must be presented in a manner appealing to the specific group. Such points as color, setup, selection of words, kind of type used in printing are very important. Publications or devices ap-

proved by technical people are not necessarily good for popular use. A frequent error in preparing teaching materials is to produce material which experts like, instead of something that appeals to the group for which it is intended. There appears to be no easy way of avoiding this, but a constant watch on the actual results obtained in the field does help to some extent.

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Chapter 7

EXAMPLES: APPROACHES TO BETTER NUTRITION THROUGH EDUCATION

I. THE AGRICULTURAL APPROACH—IRAN[1]

The short descriptions of actual programs given in this and subsequent sections illustrate a variety of approaches to the improvement of nutrition through education which are being followed in different parts of the world. These are given only as examples and do not, of course, provide a comprehensive account of the work that is being done in this field.

In 1945 the Minister of Education in Iran asked the Near East Foundation for the services of an expert to help improve the conditions of the 85 percent of the Iranian people who live in rural villages. In answer to this request, Lyle Hayden, a teacher of vocational agriculture in the United States, was sent to Iran.

The little village of Gala Nou, twenty-five miles from Teheran, where he began his work, was a collection of windowless huts. Flies swarmed over a huge dung heap. People sat listlessly around in what shade was available, in temperatures frequently as high as 43° C. (110° F.). The children had red, swollen, fly-bitten faces, and the women drew water for household uses from a sluggish, shallow, yellow irrigation ditch where sheep were scrubbed before being sheared. There was much sickness. Only one of the five near-by villages had a school, and only two adults in Gala Nou could read.

Hayden began his work with one assistant trained in Teheran. They built two practical and attractive houses to demonstrate better living conditions, but nobody built houses like theirs. They set out experimental plots of fruits and vegetables on a ten-acre farm and

[1] Blake Clark, "Lyle Hayden, Shirt-Sleeve Ambassador," *Christian Herald*, New York, November 1949.

explained to the people, who were used to growing only one crop—wheat—that these foods would bring them health. They offered the seeds to anyone who wanted them, but the peasants would not plant them. They introduced a better breed of poultry and offered to trade hen for hen. There were no takers. They supplied DDT and rid the village of insect pests with it, but nobody was interested. Hayden searched for something that would arouse the people.

In the village, water was the most precious thing. Eighty-four villages shared the water of one stream. From his own knowledge of geology, and after consulting experts, Hayden was convinced that there must be water deep underneath the villages. The peasants looked at their dry and dusty surroundings and doubted it. But with a personal gift of US$2,000 from the president of the Near East Foundation and the help of a well-driller, Hayden started to work. As the work went on day after day, the peasants became more and more pessimistic. Then, at a depth of 189 feet (58 m.), Hayden struck water. He traveled 400 miles over rutted roads to get a secondhand pump, and when this had been put into operation the water flowed regularly and bountifully. The villagers were still unconvinced—the well would dry up! For days they squatted around the pump and waited. It took a month of pumping to convince them. Suddenly Hayden became a hero, and when he talked the peasants listened. They listened to his advice on chicken raising, and soon hundreds of farmers in more than thirty villages were raising more and better chickens. He taught them how to make a simple filter to keep the water pure in the village *umber*, the traditional underground cistern for storing water. The four neighboring villages imitated Galla Nou.

He started a war on mosquitoes. He hired a man to straighten irrigation ditches and eliminate breeding places. In ten months the malaria rate dropped to less than 10 percent. Never before had there been so many well people in the village. Private landowners started to copy Hayden's methods. One of them provided a school building, supplied medicines and a visiting nurse, and chose a school teacher with Hayden's help.

Of the several teachers Hayden brought from the city, only one could stand the living conditions. This young man opened a free school in the mosque. He taught children in the daytime and farmers in the evening. For the first time in their lives, the people were seized with an enthusiasm for learning. The young teacher became Hayden's support, and work prospered. One of the first books the farmers were taught to read was a hand-printed pamphlet, *How to Use DDT*.

The Minister of Education asked Hayden to organize practical instruction in other villages. He offered teaching jobs to young villagers who could read and write, rather than employing young men from the town. Each adult who learned something agreed to teach a friend or neighbor. Private teaching went on in mud huts and in open fields. The teacher-trainees cultivated vegetable gardens and encouraged their students to plant similar plots in each village; the produce greatly improved nutrition in the villages. The young teachers learned to operate and repair agricultural implements, and whole farms were rejuvenated by using more modern agricultural methods. Now that workers could be found, owners bought more of these modern appliances.

Today, Gala Nou has good flocks of chickens, cool, fresh streams, vegetable gardens, school playgrounds, and healthy children. By the end of 1949 about fifty communities had joined in similar activities, and nearly a thousand children were receiving a practical education. More than five hundred farmers were attending night school, and three more centers were about to open.

2. THE RURAL SCHOOL APPROACH—GUATEMALA[2]

On 12 August 1944 a basic agreement was signed between the Inter-American Educational Foundation, Inc., and the Republic of Guatemala for the purpose of improving Guatemala's educational system. Under the terms of this agreement, the foundation contributed salaries and expenses of the field staff and a sum in cash; the Government of Guatemala made a substantial financial contribution and furnished office space, equipment, and other facilities. The agreement was renewed several times and the program grew rapidly. An important part of it was the improvement of rural schools.

Previously, rural school children in Guatemala had been given a certain amount of academic learning under teachers who themselves had had at most six years of schooling and were not familiar with modern educational methods. No system existed for training rural teachers, and few books and little illustrative material or equipment were available for the rural schools. There was almost no link be-

[2] Information given to FAO by the staff of the Servicio Cooperativo Interamericano de Educación in Guatemala during the visit of an FAO nutrition officer to that country.

tween the school and the community, and no attempt was made to relate teaching to living conditions.

After the agreement was signed and the Servicio Cooperativo Inter-Americano de Educación was established, children in many of the rural schools began to get an education of an entirely different nature. New methods were introduced, and reading, writing, and arithmetic are now taught in close relationship to problems of health, nutrition, agriculture, and home improvement. Outside the classroom the teacher has become a social worker, and parent-teacher and children's organizations have been made a part of the rural school program. A technical mission sent by the Institute of Inter-American Affairs worked with specialists in Guatemala to develop the new program, the objectives of which may be outlined briefly as follows:

(1) To build up good habits among country people with regard to food, clothing, housekeeping, personal health, and civic and social practices.

(2) To teach the people better farming methods and make them aware of the importance of conserving soil and other natural resources.

(3) To instruct them in the use of improved tools and appliances.

(4) To teach them improved techniques for raising domestic animals and to train them in the operation of village industries.

(5) To teach them to be good and useful members of the family and the community.

One of the first needs was for more highly trained teachers to instruct and supervise village teachers throughout the country, and a training school was opened to meet this need. At present it provides a three months' training course for teachers already employed in the schools. During the first and third months they are given theoretical and practical training in the school itself; during the second month they practice in the field under supervision. Each teacher is given a library consisting of general teaching guides on subjects such as nutrition, health, livestock, husbandry, etc., and wall charts for use in the schools. In the demonstration school associated with the training school, the trainees plan and cook school meals for children.

The present system of giving teachers already engaged in their profession this three months' course is a temporary one. Four- or

five-year courses for rural teachers have recently been introduced in the teachers' training school, and graduates from these courses will eventually provide a more highly trained group to develop the work. To prepare suitable students for this training, a preparatory school was started. Teachers are needed who can speak both Spanish and the local Indian dialects. Promising children from the elementary school are selected for further training on the basis of general capability and intelligence, and because they can speak an Indian dialect as well as Spanish. These children though often eleven or twelve years of age, have usually had only three or four years of elementary school work. Because the preparatory school is a boarding school, only boys are taken at present, but it is planned to admit girls later. The director of the school and his family live on the premises.

The preparatory course lasts one year, during which the boys do intensive work corresponding to three years of ordinary school work. They are taught to raise vegetables, rabbits, chickens, and pigs. They learn about health and hygiene, handwork, and other subjects related to community improvement. They have school meals in which garden produce is used.

Under the new rural school system, school are organized into groups of twenty, one of which is a central school or *nucleo*. The chief teacher of the *nucleo* supervises the nineteen other schools in the group, and passes on to them materials and information from the training schools. By 1949 there were about twenty *nucleos*, or approximately four hundred schools, in the new system. This represents about 14 percent of the rural school in Guatemala. It is hoped to increase the number as money and facilities become available.

The children learn things that are of direct practical use to them and their families. The smaller children may keep chickens and grow flowers and vegetables. They keep weather charts and records of their own height and weight. They learn to boil their drinking water, to keep their teeth clean, and to wear shoes to protect them from hookworm. Their reading exercises include simple information on health and nutrition. The children draw pictures illustrating good health habits and learn some elementary facts about physiology. As they grow older they are given more responsibility in the classroom and gardens, which they try to make as attractive as possible.

The village of Vista Hermosa illustrates the interest that the Guatemalan people are taking in the development of their schools. There was no proper school in Vista Hermosa, and the teacher went

to see the mayor about what could be done. The mayor, deciding that a school would be of more value to the village than a jail, gave the jail building for use as a school, and it became one of the nineteen satellites of a *nucleo*. The teacher and the children took down partitions, painted the building, and laid a stone floor. The mayor presented a pane of window glass, a luxury in this part of the country. The teacher made a blackboard by spreading a mixture of soot and milk smoothly on the wall and framing it. A low work table and benches were made from old desks; pictures and charts were drawn by the children and placed on the walls. A "health corner," with pegs for towels and tooth brushes for each child, a wash basin, and a pitcher for boiled drinking water, was set up. The room is kept spotlessly clean. At first the children worked in the garden, growing vegetables and flowers. Later rabbits and chickens were kept, and a school meal of soup and tortillas was introduced. In this little school the teaching of reading, writing, and elementary arithmetic is related to local conditions and the need for improving them. The children also learn about people in other parts of the world, how they live and how they meet their problems.

3. THE APPROACH THROUGH LITERACY CAMPAIGNS—NIGERIA[3]

A good example of a community development program starting with a literacy campaign can be found in Nigeria.

Up to 1944, the Ibo people in the Udi Division of Southeast Nigeria had made little progress. Their way of life in the village communities followed the traditional pattern handed down unchanged through the ages, and they were almost totally illiterate. During the twenty years previous to 1944, however, the Government had through anthropological research, discovered their indigenous leaders, had incorporated these into the native administration, and had taught them their new duties. These leaders were now firmly established and accepted as true representatives of the people. Through them the Government was in touch with the village communities.

[3] Descriptions of this program by E. R. Chadwick appear in *Oversea Education*, Vol. XIX, No. 2 (January 1940), published by His Majesty's Stationery Office, London; and in *Fundamental Education*, A Quarterly Bulletin, (UNESCO, Paris), Vol. I, No. 4 (October 1949).

First Plans

In 1944 E. R. Chadwick, District Officer (Administrative) of the Udi Division, initiated a general literacy campaign in the eastern provinces. It seemed to him that educators, to get good results, must work through the same indigenous rulers and institutions that the Government used for administrative purposes. Since people can be educated only if they are willing, it was necessary to obtain the support of the natural leaders, who, fortunately, were now the native authorities.

In June 1944, Mr. Chadwick received a pamphlet on general education for literacy, published by the Colonial Office. He discussed the subject with the African staff at a monthly meeting of native authorities, and four leaders asked that the experiment be tried in their villages. The District Officer and the African staff had a first-hand knowledge of the need for development in the villages—development in literacy, health, agriculture, transport, and other fields. They reassured the elders of the villages that the literacy campaign would not deprive them of their perquisites. They obtained a grant of £20 from local funds administered by the native authorities to buy materials, and made a start.

Organization and Development of the Program

Ogwofia, one of the experimental villages, had only two literate adults. At the beginning of the literacy program the whole village set to work, and in two days a village hall was built for the classes, which were held on every market day. The village children, who attended a mission school in a nearby village, taught the adults in the evening. The elders said, "We pay their school fees, so they must tell us, for nothing, what they have been taught."

The literacy campaign in Ogwofia grew into a program of general development. This started with the investment of £30, which had been saved to buy reading and writing materials, in a community-owned hand oil press and nutcracking machine. A small fee was paid by each user of the equipment, which went into the village fund. With this money the people bought material to build a co-operative consumer's shop, and the profits from this shop, together with small grants from the native administration, enabled them to build a village reading room, a maternity home, and a dispensary.[4] At the same time, other improvements were added—model latrines, an

[4] The story of the building of a maternity home is told in *Daybreak in Udi*, a documentary film issued by the British Information Services and adjudged by the U.S. Academy of Motion Pictures and Sciences the best documentary film of 1949.

incinerator, a small market, chicken houses—and an attempt was made to improve the breed of local fowls. A post office was opened at the village shop. A women's co-operative bought a sewing machine, and the midwife began teaching the women to make baby clothes. The Government gave a radio for the reading room. A leprosy survey and a hookworm survey were made, and treatment for both these diseases was given. Citrus trees were planted at the village center. All the work on the village projects and buildings was done for nothing by the villagers. Elders from other villages were encouraged to visit Ogwofia, and by 1947 more than thirty communities were following its example. The best progress was made in communities where there was a strong village leader. Many of the activities contributed to the improvement of nutrition and health.

At first, funds from local sources were enough to meet requirements, but the desire for amenities increased each year. To make these possible, Government services provided small grants-in-aid, ranging from £5 to £109 per village. These sums were usually negligible compared to the total cost of the project, but sometimes they encouraged local enthusiasm at a critical time. The main contribution to the whole development program came from the villagers themselves in the form of voluntary labor. Hundreds of thousands of man-hours of work were performed by them. As the program developed, more funds became available through the profits from village industries owned and operated by the community.

The approach, in general, was the encouragement of natural leaders by district officers. As a result, the villagers asked of their own accord to be allowed to start literacy classes. The people found that it was relatively easy to learn to read and write, and they also found that this learning could be used as a means for bettering their conditions. They chose for themselves what they would do and what they would build; each village selected its own projects, based on its own needs. Supervision and advice were given by the district officers and their staff, who did this work in their leisure hours in addition to their regular jobs. Specialized government officers helped, including the registrar of co-operative societies. When technical assistance was needed in building, the people hired native bricklayers and carpenters from outside the district.

The materials used were nearly always local products that were easily available. For example, cheap writing slates were made from small boards normally used for roof shingles, which the people blackened themselves. Natural chalk, dug up locally, was used for writing. However it was found advisable, when a full-scale literacy

campaign was being started in an area, to purchase a small hand printing press so that reading material could be produced in dialect; this material had to be ready for the people as soon as they had learned to read. Simple booklets on health, midwifery, soil conservation, and leprosy control were produced.

Chadwick believes that it will not be possible to gauge the success of this type of large-scale community development until the experiment has been running for a longer time. There may still be serious setbacks, such as those arising from the suspicion that development will affect private ownership of land. There have, however, been remarkable achievements in many villages, leading not only to material improvements but to a better community spirit and a sense of civic pride. Villages busily engaged in development are much more contented; they have less time to spare in quarreling with their neighbors about land, and they have greater confidence in the administrative services.

4. THE CITIZEN ASSOCIATION-GOVERNMENT APPROACH—THE NETHERLANDS[5]

In normal times most people in the Netherlands have a fairly satisfactory diet. But in the years 1928 to 1938 the food situation was adversely affected by economic depression, particularly in the rural areas. In 1934, in response to the need of the times, two organizations concerned with popular education in home improvement and nutrition were established—the Rural Institute for Domestic Information and the commission for Domestic and Family Information, which operates in the towns. The work of the organizations continues because there is still evidence of poor nutrition among certain sections of the population. The most striking example is the occurrence of infantile scurvy resulting from lack of fruit juices, vegetables, and potatoes. In some parts of the country the consumption of vegetables is low but milk supplies are generous; in others, there is plenty of meat but not much milk. Some children of school age in the lowest income group are said to be retarded in growth, probably as a result of dietary deficiencies. Resistance to change in diet is very strong in the Netherlands. Improvement can be made through increased consumption of milk, cheese, vegetables, and fish without drastically changing the national food pattern.

[5] Information supplied to FAO by Professor L. M. J. Dols, Voorburg, Netherlands, 1948.

The work and policy of these two organizations are guided by a Food Council set up by the government in 1940, the members of which are experts in theoretical and applied dietetics and in health. The Food Council has an Information Office, established under the Ministry of Agriculture but directed by an Inspector of National Health, which determines the lines of action in the country's nutrition education program, consulting when necessary with Government departments and research institutes. This arrangement ensures that the information taught is consistent and in accord with national food policies.

In the Country

The Rural Institute for Domestic Information is controlled by a Board consisting of representatives of the Ministry of Education, the Information office, associations of farmers' wives, the Country Women's associations, agricultural and horticultural associations, and associations, like the Red Cross, which work in the health field. In every province there is a provincial board on which the same bodies are represented. The Institute employs many women nutrition teachers. Work is carried out through courses for houswives and house-to-house visits. Usually, temporary local committees organize meetings at the request of the provincial board. The local committees consist of prominent women in the neighborhood, such as the wives of doctors and clergymen.

The courses are given in a house or inn and include some simple nutrition theory, cooking demonstrations, menu-planning with local foods, and instruction in the growing of vegetables and fruit. The Information Office supplies folders, films, and other teaching aids. About 10,000 country women are reached by nutrition teaching every year.

In the Towns

The Commission for Domestic and Family Information is composed of representatives of various urban groups. Several towns have local committees on which all sections of the population are represented. In the larger towns some administrative and teaching personnel are employed, who organize courses, demonstrations, film shows, and lectures; in the smaller towns, the work is done by volunteers who are members of the local committee.

Additional teaching is carried out in the large towns by qualified nutrition teachers employed by private industries, municipal or private institutions, or co-operatives. All of these work in close con-

tact with the Information Office, which supplies them with materials. Between 30,000 and 40,000 women are reached annually through these channels.

The low-income families are the most difficult to reach. Social workers and district nurses, when they make home visits, encourage these families to attend courses and give them nutrition folders. Both social workers and district nurses are given some nutrition training as part of their professional preparation.

Information for Everybody

Nutrition information is also given through the press. The daily provincial and local papers all publish recipes and nutritional articles free. This information is sent to them once or twice a week by the Information Office, and it is estimated that each piece reaches from 300,000 to 400,000 of the 2,500,000 total families in the Netherlands. Experts adapt the information to local and regional conditions before it is sent out; contact teachers keep the Information Office posted with the requirements of their districts.

Radio is also used for nutrition teaching. The broadcasts are not written by the Government, but the Information Office keeps in touch with the speakers so that the information given is in line with the national policy. The large demand for leaflets which follows each broadcast is evidence of the effectiveness of this medium.

Nutrition instruction is also given to people in charge of large-scale food preparation in such institutions as hospitals, orphanages, prisons, and army and navy mess halls.

For the schools, an instruction booklet for teachers and a reading book for elementary school children have been prepared, in which nutritional subjects are explained simply.

5. THE HOME ECONOMICS APPROACH—PUERTO RICO[6]

The nutrition program in Puerto Rico exemplifies a program developed largely through the efforts of a university home economics department.

A study made by the Home Economics Department of the

[6] Lydia J. Roberts *Nutrition in Puerto Rico*, FAO document N50/Co2/15, presented at the Nutrition Conference, Rio de Janeiro, June 1950.

University of Puerto Rico in 1946[7] (see page 18) showed the diets of a large majority of Puerto Rican families to be deficient in almost all of the essential nutrients, and especially in good-quality protein, calcium, vitamin A, and riboflavin. These deficiencies result from lack of such foods as milk, eggs, meats, fish and fowl, from insufficient vegetables and fruits, and from dietary habits and prejudices that limit the use of certain foods. Nearly half of families eat diets composed almost exclusively of rice, red kidney beans, and starchy fruits and vegetables (especially green plantain and green bananas). Although the problem is largely economic, it is believed that much can be done to improve the diet through education and through practical programs to make better foods available.

A nutrition committee was set up early in the war years, but it was largely inactive. In 1943, as the outcome of a nutrition workshop held in June of that year (see page 45), a new committee was established to co-ordinate and guide all nutrition work in Puerto Rico. This committee includes representatives of all agencies whose work is related to nutrition, as follows: the University Department of Home Economics, the Extension Service, the School of Tropical Medicine, the Forest Service, the Departments of Health, Instruction, and Agriculture, the Land Authority, the General Supplies Administration, the public health, dietetics, home economics, and nursing associations, and the milk station program. Each agency has its own program and methods of work, but the efforts of all are co-ordinated to good effect in the nutrition committee. The main objectives outlined in the workshop form the basis of the practical program.

Nutrition Goals

(1) To increase the use of milk (including dried milk), and especially to make it available to low-income families in rural districts.

(2) To encourage the increased use of yellow and green vegetables in order to supply vitamin A, which is markedly low in most diets.

(3) To improve the quality of the rice-and-beans diet by promoting the use of more nutritious rice and of chick-peas and pigeon-peas.

(4) To increase the use of native foods rich in vitamin C and to discourage the use, especially by low-income families, of the more costly and less nutritious imported foods.

[7] Lydia J. Roberts and Rosa Luisa Stefani, *Patterns of Living in Puerto Rican Families*, The University of Puerto Rico, Rio Pedras, 1949.

(5) To stimulate the raising of rabbits as a cheap source of meat and, to the extent feasible, of chickens and pigs.

(6) To promote greater home production of foods as the most practical way in which rural families can improve their diet.

Activities

Among the projects undertaken by the committee and its member agencies is that of promoting the use of dried milk. The task was to get the milk into the retail stores in areas in which it was most needed and, at the same time, to launch an educational program to teach the value and economy of this food. Two producers have co-operated by putting dried milk on the retail market in quart-equivalent packages at a price about half that of whole fluid or canned milk. The small packages can be purchased by families who cannot afford large quantities.

The nutrition committee prepared a lecture demonstration and other educational materials to teach people about the nutritive value and use of skim milk powder. Training meetings were then held at strategic places throughout the Island to prepare home economists and other qualified people to give demonstrations. More than 400 workers have had such training and are giving demonstrations in various communities. By the spring of 1950 these had already reached a total of 40,000 people. By continuing this program, with the active support of the commercial producers, it is hoped that powdered milk will eventually be available in all country stores and will be widely used by low-income families. All agencies work together as a unit in carrying out this project, sharing the responsibility of preparing materials and conducting demonstrations. The governor and his wife are supporting the project, and are using dried milk in their residence.

Several activities to improve the cereal products used in Puerto Rico have been undertaken. Legislation requiring the enrichment of all bread with B vitamins and iron was passed in 1945. More recently, a practical method has been developed for enriching white rice without changing its color, taste, or texture, and steps are being taken to provide this rice to all government institutions. It is planned to enact legislation requiring enrichment of all rice in the Island as soon as an adequate and continuing supply can be assured.

Another step to improve the diet is an educational program to encourage the use of yellow sweet potatoes, *calabaza* (yellow squash), various types of green vegetables, ripe papayas, and mangoes. Agri-

cultural extension workers are encouraging the production of these foods, and all agencies represented on the committee are educating people to use them. Some progress is being made, for yellow sweet potatoes and ripe papayas are increasingly seen in the markets. Chief emphasis, however, is being put on the *calabaza*. A start has also been made to encourage the use of native fruits; fruit trees are being planted along the roadsides throughout the Island to make free fruit available to rural people.

The deficiency of protein is being attacked by a rabbit-breeding project and by education to increase the use of pulses. Nearly every family can find a place to house a pair of rabbits, and their care and feeding costs little or nothing. When the dried milk and *calabaza* campaigns are over, an intensive campaign on rabbit-keeping will begin. Nutrition education is also being carried out through school lunches.

The University Department of Home Economics is responsible for the professional training of workers. About sixty students are graduated from this department each year; they take positions as school teachers, dietitians, and extension agents. Practical home food production, including gardening and raising small livestock, is taught in all courses; this enables students to give practical help to others after their schooling is finished. In addition, in-service training is given to teachers through demonstrations, meetings, conferences, training periods, and workshops, and teaching aids are supplied for their use. One of the objects of the survey of living conditions referred to above was that all teaching in nutrition and home economics should be based on a sound knowledge of the people's needs.

6. THE FOOD FOR FAMILY FITNESS CAMPAIGN—JAMAICA[8]

The European conquerors of Jamaica established many large plantations of sugar, coffee, tobacco, citrus fruits, and, later, bananas. In the early days, Africans were brought to the Island as slave laborers on the plantations. The breakdown of their tribal organization and the weakening of their family ties and traditions as a result

[8] D. T. M. Girvan. "Social Welfare Developments in Jamaica and the Jamaican Social Welfare Commission." *Educational Approaches to Rural Welfare*, Food and Agriculture Organization and Inter-American Institute of Agricultural Sciences, Washington, D.C., 1949, pp. 10-37. *Also* Second Annual Report of the Central Advisory 3F Committee, Jamaica, B.W.I., 1949.

of slavery led to many evils which still exist. But the abolition of slavery and the rapid growth of the banana industry have helped to build up an independent class of small farmers who have formed settled communities and become the backbone of the country.

Since 1895, when the Jamaica Agricultural Society was founded, many social, economic, and welfare activities have gradually developed, including social services, voluntary organizations, parent-teacher associations, loan societies, and co-operatives. A large banana co-operative, the Jamaica Banana Producers' Association, has played a significant part in developing social services for rural people.

In the years after the First World War there was acute unemployment in Jamaica. Returning soldiers brought new ideas on what living conditions should be, and a sense of the urgent need to better the lot of the people spread through the Island. By 1930 a start had been made toward organizing citizen's associations, trade unions, and clubs, and the first practical training center for poor boys was opened in this year. In 1936 a Labor Department was created, and in 1937 there was widespread agitation for land reform. In this year also, Jamaica Welfare Limited was established. This has been the chief social service organization in the Island, and has worked with all the other agencies concerned with solving the many acute problems of peasant life, including an urgent problem of malnutrition. In the early stages it was financed by a contribution from the United Fruit and Standard Fruit Companies of one cent per bunch of bananas which they shipped from Jamaica. People of integrity and experience from all classes of Jamaican society were chosen to form a board for the new organization, which was constituted as a private company in 1937. In 1943, when banana exports dropped, the company was reconstituted as a grant-aid body administering the rural welfare program as an agent of the government. It was eventually established by law as the Jamaica Social Welfare Commission in April 1949. The Jamaica Welfare program aims at rural reconstruction, not charity. A "better village" campaign was initiated in 1944, and many specific projects concerned with this objective have been developed.

The gravity of malnutrition among rural families was not fully realized until a report, *Nutrition in Jamaica*, was issued by a Royal Commission in 1945. This was followed by a report by B. S. Platt on nutrition in the British West Indies. Jamaica Welfare Ltd., seeking a new action program through which all agencies could participate in the improvement of rural people, chose better nutrition as the aim. A campaign was organized with the slogan, "Food for

Family Fitness"—the 3F's for short. This was the first effort of the Company to develop a widespread program of popular education, and is said to be the most successful which it has so far attempted. The objectives were stated in rather general terms to assist as many community organizations as possible in including some form of nutrition education in their programs. The campaign stimulates action by communities, under their own leadership, to improve living conditions; it supplies the instruction needed for adult education in better nutrition and home improvement and encourages group and family projects.

In 1947 a central advisory 3F committee was set up. Its membership consists of representatives from the Departments of Agriculture and Science, Education, Lands, and Medicine and from the Jamaica Agricultural Society, the 4-H clubs, the Central Council of Voluntary Social Service, the Women's Federation, and the University College of the West Indies. The Secretary for Social Welfare Services is chairman. Each of these organizations and departments has a special part to play in the nutrition campaign.

The Three Stages

Each year's campaign is divided into three stages—training the leaders, launching the campaign, and carrying out the projects.

In the first stage, voluntary leaders are given three months' intensive training as part of a training plan which extends over a three-year period. In the first year, cooking, vegetable gardening, and basic nutrition are taught; in the second, child care, the making of preserves, and more gardening; in the third year, gardening continues and instruction is given in small livestock keeping and advanced cookery. In addition the leaders are taught methods of giving demonstrations and other teaching techniques. They learn how to organize and guide local committees, keep records, prepare materials for the program, and run 3F clubs. Leadership training is carried out in the various subdivisions of each district, and leaders meet once a week for study and work with the local social welfare officer. At the end of each month all the leaders in a district meet together for a day to review what has been done and to encourage unity of effort. At the end of the three-month period a three- to five-day residential camp is held in each area. In 1948/49 seven residential camps were held, and week-end camps were organized for specific training. A mobile demonstration unit or "school" and a cinema unit have been found useful in the training program.

The second stage is the launching, throughout the Island, of

particular programs for the year. This is done through public meetings in school rooms, chapels, or open yards, where music, drama, cinemas, displays of fruits and vegetables, and other devices are used to arouse interest in the campaign.

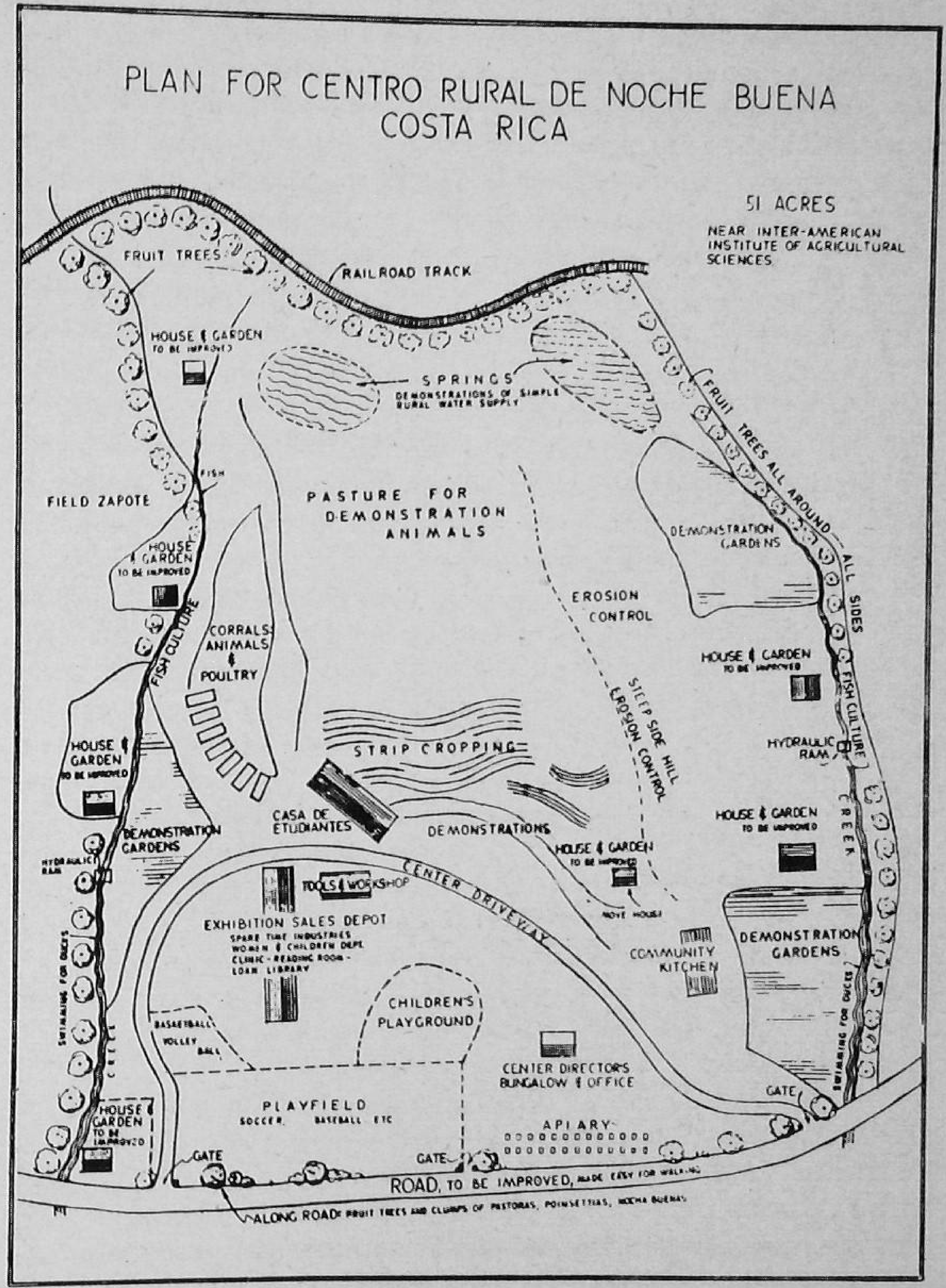
The third stage is the work or project period, during which the leaders, with the assistance of 3F officers and local committees, promote action in their communities. These projects culminate in "achievement days." By March 1949 more than 2,000 projects had been completed in different parts of the Island, and more than 3,000 others were in progress. The projects cover improvement of cooking methods; encouragement of better breakfasts; increased use of nutritious foods such as milk, green vegetables, eggs, and groundnuts; the making of preserves and storing of food; soil conservation; vegetable gardening; poultry and small livestock keeping. Booklets and other teaching materials are prepared for use in each of the projects. Examples of pamphlets prepared especially for voluntary leaders are *What We Should Eat and Why* (revised), *Food for Family Fitness, Plant for Family Fitness,* and *Vegetable Gardening.* Popular pamphlets such as *The Milky Way, Keep Fit with Vegetables,* and *Rabbit Rearing* are published for the general public.

The Jamaica Social Welfare Commission is now attempting to develop satisfactory techniques for evaluating the effectiveness of the 3F campaign. Tests and measures are applied to the program in each community. The criteria include: whether there is an active group in the community; whether it includes delegates from the village council, the community associations, etc., as well as private individuals; the degree of co-operation among agencies; the number and kind of nutrition projects; evidence of practical effects in home and family life judged by such things as the size of gardens, the amount of canning and preserving, and changes in family diets; the number of new local leaders and the faithfulness and interest of trained leaders; the quality of educational materials used; the increased interest in literacy as a result of the campaign; the number of agencies and organizations including a nutrition project in their regular program; the assistance given to neighboring communities in promoting new 3F campaigns.

7. THE RURAL CENTER APPROACH—INDIA[9]

A rural center has been described by D. Spencer Hatch as follows: "A few acres of land, central to and easily reached by many

[9] D. Spencer Hatch, "Extension Experience in India," chapter 6 of *Farmers of the World,* Columbia University Press, New York, 1945.



A plan for the Rural Center which Spencer Hatch has started to develop at Turrialba, Costa Rica.

rural dwellers around it. On the Center are many simple, inexpensive activities, illustrative of what rural families and rural communities can copy and do themselves. These illustrations are in active operation, so the Center is a perpetual exhibition of absorbing interest to the rural people for miles around who have a standing invitation to spend as much time as possible there. It is the rural people's Center; everything is simple and within their understanding; they feel at home there. The activities will vary for different Centers, for they must be chosen to answer the needs of the people around them; nothing is put into the Center's plan without a reason . . . the purpose of the Center and its extension is to bring about improvement—cultural, mental, physical, social, and economic."

Such a center contains facilities for improving all aspects of community life. For cultural and mental development there is a reading room and library, a permanent exhibit, classes and programs for individual families and for groups of adults and children. There are demonstrations and instruction on nutrition, hygiene, and improvement of water supplies. The center may have a practical nurse who works from a first-aid station and clinic, visiting the people of the area. Families are taught to build inexpensive model homes with year-round gardens which can serve as models to others in the community. The center demonstrates how living conditions can be improved and incomes increased by growing better gardens, fruit trees and shrubs, and commercially valuable crops. It shows how to protect plants from pests, and demonstrates how simple irrigation systems, fish ponds, small livestock, and an apiary can improve food supplies. There may be a community kitchen for canning and preserving foods. Art crafts and home industries, such as pottery-making, knitting, and sewing, are developed.

The center is not a "demonstration farm" but a place belonging to the people themselves, where they can work and learn for the benefit of themselves and the village. It is a place where many little things which contribute to better living can be illustrated. The keynote is simplicity. The center can inspire a wish to improve and can provide the assurance that improvement is possible. It is a place where leaders can be trained so that centers and the extension services which radiate from them can spread to other areas. Nothing is given to people outright except educational services, but the leaders try to find ways, through co-operatives, sharing, loan systems, barter or some other means, by which people can themselves obtain the necessary materials. The philosophy is that no person must be deprived by poverty of a chance to progress. People are helped to help themselves, one step at a time. They learn by doing.

In 1921 Spencer Hatch, acting for the Indian National Council of the YMCA, started to build a rural demonstration center in Martandam, Travancore State. This site was deliberately chosen because the land around it was poorer than in other parts of Travancore. The rainfall is relatively low and the village is far away from the capital city, though it was connected to it by a motor road. Moreover, the people of Martandam themselves asked for help.

The people in the area include many of the races and creeds found in southern India. Because of the diversity of religion and economic status, it was found that teaching the people how to work together was a hard task, but it was a necessary one. The workers at the center studied the life of the villagers, their beliefs, practices, social organization, attitudes and prejudices, and were careful not to violate them.

Activities at the center were comprehensive in scope and designed to meet the needs of the people, but the whole system was so arranged that people had to seek help, rather than have it thrust upon them. Through local leaders the villagers gradually came to appreciate the importance of the help the center could give them, and sought it in increasing numbers. The center demonstrated in the simplest way how the villagers could grow more food and increase their purchasing power through village industries. It demonstrated how sanitation, hygiene, health, and well-being could be improved and a better economic position attained. Nothing was done that could not be imitated in villages. A better diet, for example, was achieved by persuading the villagers to produce and eat "vegetarian" or unfertilized eggs. *When the people realized that eating these eggs was not taking life, the village leaders learned how to raise chickens and produce eggs.* A "cock circuit" was organized by the center, any family willing to get rid of their cocks could borrow a pure-bred bird for two months on condition that they set the fertile eggs. A simple egg-marketing co-operative was then organized to market the eggs produced for food.

Another successful innovation was beekeeping. Honey has been used in India for centuries, as a medicine rather than a food, and this industry rapidly became popular. The center started beekeeping on modern lines, in hives adapted to the small Indian honey bee. Swarms were transferred to any place where the villagers could accommodate them—hollow trees, caves, roofs, and hives. The honey brought an excellent price, and a great number of new beekeepers learned the technique. How far reaching the influence of such a demonstration may be is illustrated by the story of three brothers,

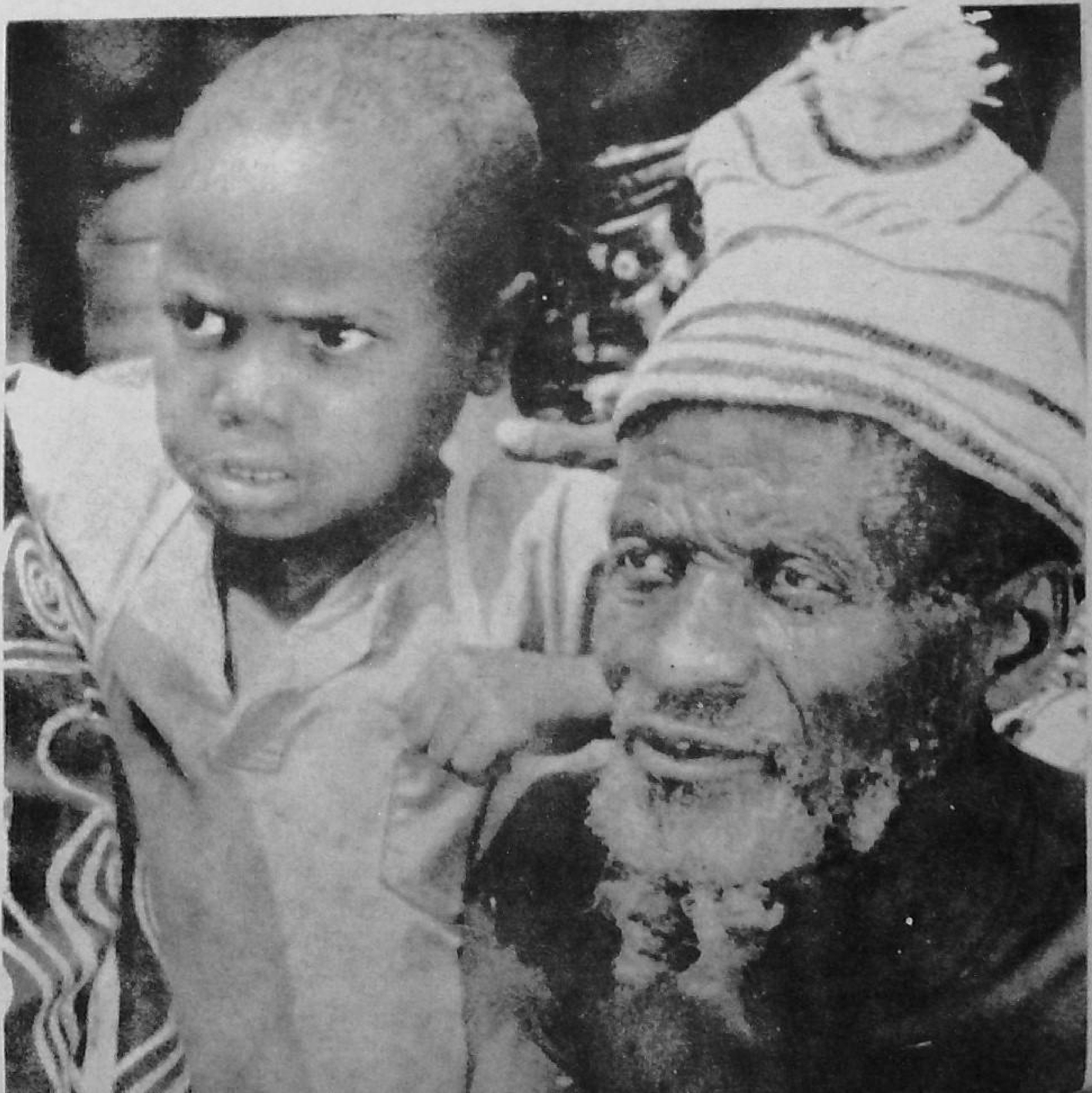
unknown in the neighborhood, who came to the center from a long distance to exhibit their homemade honey and beekeeping equipment. It turned out that they had been standing in the crowd day after day and listening quietly to the beekeeping classes. The brothers were earning a steady income for themselves and their families. A beekeeping co-operative now organizes the extraction and sale of the honey. The Government, seeing the possibilities of this industry, gave timber for hundreds of hives to be made at the center and sold to beekeepers at cost. Honey remains a medicine in most of India, but around Martandam it is a food.

The buildings at the center are of the simplest kind, made of mud walls, bamboo, and coconut thatch. The library cost only $12.00, but it supplies space for books, a reading room, and an uncovered veranda which serves for a platform and a stage. The headquarters for the Boys' Work Department cost nothing but the labor; the boys themselves cut the bamboo from which it is constructed. The main classroom is thatched with coconut leaves and cost only the equivalent of US$7.00. Yet by 1945 Martandan had trained more than 1,000 picked men and women to carry out similar work in India, Burma, Ceylon, China, and Egypt.

Few of the personnel are paid, but by 1945 the "honorary" workers numbered more than 1,000, and included such varied types as rural school teachers, farmers, lawyers, bullock drivers, and professors from the nearest college.

The Indian villager is conservative and slow to change. Far-reaching and permanent improvements can be achieved only if trained workers stay in the area for many years and are always on hand to help when they are needed. These workers should preferably come from rural backgrounds and have a full understanding of rural problems.

Old and young come to listen and learn.
Still photograph from the film *Daybreak in Udi* by courtesy of the British Colonial Office.



APPENDIX I

SAMPLE QUESTIONNAIRE

Type of questionnaire for investigating food habits suggested by Dr. Kurt Lewin of the State University of Iowa, U.S.A., with suggestions for using the answers.

1. Write down the different foods a person in a family like yours eats *almost every day.*

Foods	Why?

2. Both Jim and Bob stayed at friends' houses over the weekend. Monday morning they were talking about it on the way to school.

Bob said: "I had a great time because the food was just swell; each meal was wonderful!"

Jim said: "Oh, I had awful meals; the food was terrible. It was no fun at all!"

Name the foods served at the house Bob visited	Name the foods served at the house Jim visited
Breakfast	Breakfast
Lunch	Lunch
Dinner	Dinner

3. Name a food which someone in a family like yours would eat and would be praised for eating.

Food	Who would praise them?	Why would they praise?

4. Name a food which someone in a family like yours would eat and would be scolded for eating.

Food	Who would scold?	Why would they scold?

5. This question asks for the name of the respondent and data on sex, grade at school, nationality of parents, and any other relevant information by which natural groupings can be made.

The answers to Question 1 should indicate the foods which form the basic part of the diet and which arouse no conflict in the home or the community—foods that are accepted by everyone automatically. In designing an educational program, the consumption of these foods can be assumed and no teaching is needed to encourage their use. This makes it possible to simplify the program. The educator can then concentrate on teaching the use of foods which will supplement these in order to provide a well-rounded diet. The answers to Question 2 tell the educator what foods are especially esteemed; therefore, the consumption of these could be easily increased if supplies were assured. They also show which foods are despised or disliked and would therefore be difficult to popularize. Answers to Questions 3 and 4, if given by children, indicate the attitudes and reasons why certain foods are liked or disliked, or at least the reasons given by their parents. If the same questionnaire is answered by the parents, a comparison of replies may reveal interesting sidelights on the parents' attitude toward food and toward training children in eating habits. Questions 3 and 4 also indicate the person with the most authority in the household with regard to food, and hence the most important person to reach in an educational program. Question 5 gives data which enables those answering the questionnaire to be put into suitable classifications for the particular community.

Habits, likes and dislikes, and attitudes common to the group should be evident from examination of the answers. Such a questionnaire may give useful guidance on how and where to start a program of education, for a fuller account of the use of this questionnaire, see the original report.[1]

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[1] National Research Council, U.S.A., Committee on Food Habits, *A Group Test for Determining the Anchorage Points of Food Habits*, a preliminary report on a study directed by Kurt Lewin, Child Welfare Research Station, State University of Iowa. Washington, D.C., June 1942, 21 pp. (Mimeographed).

APPENDIX II

TRAINING OF SPECIALISTS IN DIETETICS AND NUTRITION

Dietitians.

Dietitians may be defined as workers who have received university or college training in dietetics and catering, followed by a period of practical institutional work designed to qualify them for diet and food management in hospitals, schools, lunchrooms, and other institutions. During the course of their work they have the opportunity for educational activities in nutrition, e.g., they can teach patients in hospitals and children in school lunchrooms and they can also provide instruction to other workers, such as nurses and schoolteachers.

The profession of dietitian is gaining widespread recognition. Several countries—among them Canada, the Netherlands, the United Kingdom, and the United States of America—have organized professional associations which require high standards of training as a qualification for membership. For example, to be eligible for active membership in the American Dietetic Association[1] (or for entrance to a dietetic internship approved by the Executive Board of the Association), a dietitian must have a bachelor's degree from an accredited college or university, based on a specific number of hours of work distributed among the following subjects: chemistry, biology; the social sciences; education; food selection, preparation, and service; nutrition and dietetics; and institutional management. Additional courses are recommended for applicants who have not completed a dietetic internship.[2] Some of these are required also of graduates undertaking particular types of internships. A dietetic internship must include a minimum of class instruction equivalent to three and a half hours per week for 36 weeks, in addition to practical training. Most approved internships are served in hospital dietetics, but a few are in administration, or in dietetic work in medical centers, or food clinics.

In the United Kingdom, dietitians at present must have postgraduate training in dietetics covering a year to a year and a half of work and leading to a diploma. A prerequisite to this training is a degree in science or in household and social science, a diploma in domestic science or in institutional management (three-year courses), or a state registration nursing.[3]

The British Dietetic Association has recently published a model syllabus for a four-year university course leading to a degree in dietetics.[4] In addition to the basic sciences, the proposed course includes the theory and practice of household cooking,

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[1] *Academic Requirements for Active Membership in the American Dietetic Association and Entrance to Dietetic Internships Approved by the Executive Board.* Effective 1 September 1944, revised 11 October 1949. The American Dietetic Association, Chicago, 1949.

[2] These cover the following subjects: advanced chemistry, analytical chemistry, food chemistry, quantitative chemistry, advanced biochemistry, zoology and general biology, advanced psychology, personnel management, community organization, consumer economics, economic geography, methods of teaching nutrition, experimental cookery, accounting, institutional marketing, and institutional equipment.

[3] *Dietetics as a Career.* The British Dietetic Association, London (undated).

[4] The British Dietetic Association, "Model Syllabus of a Course of Study for a Degree in Dietetics," *Nutrition Dietetics Catering.* London, spring 1947, pp. 24-30.

household and social economics, diet in disease, cookery for large numbers, institutional management, and catering. The fourth year consists of practical work: 12 weeks of work in a diet kitchen and out-patient department, 22 weeks of institutional kitchen work, and 8 weeks of specialization in a diet kitchen or large-scale kitchen or in dietary survey work. Such a degree course has not yet, however, been started.

A model scheme for a postgraduate diploma course in dietetics has also been published by the British Dietetic Association.[5] The plan presupposes that the students, as undergraduates, have had adequate training in the basic sciences and in cookery. But because of the variety of undergraduate preparation, an extra year's preliminary training may often be required before entrance to the postgraduate dietetic course. For example, graduates in institutional management may need further training in science, while science graduates may need practice in household and institutional cookery.

The dietetics curriculum, as proposed, includes approximately three months of theoretical work and eight months of practical work. The theoretical study covers the basic sciences, nutrition, infant feeding, social services, and business affairs. The practical work includes four months in the special diet kitchen of a recognized hospital with accompanying lectures on the medical aspects of disease and diet, and four months in a recognized large-scale catering department with lectures on catering and administration.

Some countries have recently started degree courses in dietetics. Poland, for example, has organized a four-year course at the College of Agriculture in Warsaw. The first two years are devoted to the basic sciences, and during the last two years students may specialize in institutional management or in dietetics.

Many other countries have less advanced training Among these are Brazil, Chile, and Czechoslovakia In Chile, a number of schools give two-year training courses for high school graduates. One of these, the Santiago School for Dietitians, was founded in 1939 under the auspices of the Social Welfare Service.[6] Its course consists of one year of formal instruction[7] and one year of practical work in a hospital. The work of the first year comprises about 300 hours in anatomy, physiology, nutrition, food classification and analysis, metabolism, cooking and kitchen management, special diets, accounting and administration of hospital food services. At the end of the year's study, each student must write a thesis on a subject selected by the faculty and take an examination. During the second year the students serve as dietetic interns in hospitals for at least ten months.

This type of training helps to establish the profession of dietetics and it is a fairly rapid means of supplying trained personnel for work in institutional catering and for such activities as the supervision of school feeding programs. It can be developed into full academic training as circumstances permit. Such courses do not include all the instruction needed to train community nutritionists. But, where community workers are urgently required and full courses in community nutrition are not available, they can, if supplemented by in-service training or by further academic study, provide workers sufficiently trained for this purpose.

Nutritionists

Nutritionists may be defined as workers who have received training in nutrition

[5] The British Dietetic Association, "Scheme for a Diploma Course in Dietetics," *Nutrition Dietetics Catering*, London, spring 1947, pp, 40-43.
[6] Information given to FAO by Dr. Esteban Kemeny, Director of School for Dietitians, Santiago, Chile, 1949.
[7] It is hoped to extend the formal instruction to 18 months.

in a college or university designed to qualify them for work in practical nutrition programs (including nutrition education). They need in addition to scientific training, a knowledge of teaching techniques and of methods of working in communities. When responsible for the nutrition program of a country and its co-ordination with related services and activities, they must have very broad training and experience.

In view of the increasing demand for properly trained nutrition workers in the United States, the Committee on Professional Education of the American Public Health Association periodically publishes reports on desirable educational qualifications for nutritionists in health agencies.[8]

Many colleges and universities in different countries offer postgraduate training in public health nutrition in their schools of public health, or postgraduate courses in their departments of home economics.[9] Some offer undergraduate training in home economics with a major in nutrition. This second type of training is given, for example, by the Home Economics Department of Western Reserve University, Cleveland, Ohio, U.S.A.[10] The aim of this Ohio course is to help students acquire an appreciation and knowledge of nutrition, ability to interpret and apply its principles, and the skill to carry out the techniques needed in public health nutrition work. The subjects studied include: the role of nutrition throughout life and as a factor in public health; the application of nutritional principles in a public health program; nutritional requirements; therapeutic dietetics; the interpretation of the results of nutritional research in practical food management; food habits; diet surveys and their interpretation; food management and food preparation for families at various income levels; food regulations; group feeding; educational techniques; and evaluation procedures.

Emphasis is placed on the functions of nutritionists in national, state, and local public health programs organized by official and voluntary agencies and on the need for co-ordinating these functions with those of other professional workers. The history, purpose, and philosophy of public health programs, their legal and administrative aspects, the functions of various divisions in public health agencies in relation to nutrition, and the application of nutrition principles through organized community effort are studied. The effects of basic social, agricultural, religious, racial, educational, psychological, and economic factors on food habits, nutrition, and welfare, and the application of nutritional principles in solving the problems which such factors create, are also stressed. The students are taught to consider the effects of nutrition on the health not only of individuals and communities but of countries and the world. Local, national, and world problems of health, agriculture, and trade are discussed. The students learn through a combination of courses and field experience.

The Department of Human Nutrition, School of Hygiene and Tropical Medicine, University of London, also offers a nutrition training course,[11] but the emphasis here is on somewhat different subjects. Several colonial governments have recently created new posts of "Nutrition Officers." These officers represent the most specialized group

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[8] American Public Health Association, Committee on Professional Education, "The Educational Qualifications of Nutritionists in Health Agencies," *Journal of the American Dietetic Association*, Vol. 22, No. 1 (January 1946).

[9] Advanced training is very often research in an academic institution which qualifies graduates for a higher degree in science. Students may have a previous degree in medicine, home economics, or other sciences. This type of training, however, is usually preparatory for a research career rather than for community nutrition or educational work, and is therefore not discussed further in this study.

[10] Harriet Huncher. *Objectives of Graduate Program in Public Health Nutrition*. Home Economics Department, Western Reserve University, 1948. (Mimeographed.)

[11] Information given to FAO by M. W. Grant, 1948.

of nutrition workers in the Colonies. The majority of them are women who hold university degrees in science and who have had experience in the United Kingdom as survey workers, canteen advisers, or teachers. Before taking up their posts overseas, they are given an intensive six-months' course in tropical nutrition at the Department of Human Nutrition. Their work in the Colonies includes conducting surveys, organizing school meals, supervising institutional feeding, giving instruction in nutrition to groups of workers and to the general public, and assisting certain government departments. Their main function, however, is to act as organizing secretaries for local nutrition committees made up of workers in fields such as education, agriculture, and social welfare.

Courses for persons interested in field work in nutrition are exemplified by those given at the School of Hygiene, University of Toronto, Canada, and at the Nutrition Research Laboratories, Indian Research Fund Association, Coonoor, India. These schools have graduate courses open to both medical and non-medical workers.

The Canadian course[12] consists of approximately 40 lectures and a considerable amount of field work which varies in content according to the interests and needs of the students. The subject matter includes the functions, requirements, and food sources of different nutrients; selection of adequate diets, effects of food processing and cooking on nutrient values; the relation of agriculture to nutrition; methods of assessing food intake and interpreting data; methods and reasons for studying food habits and factors influencing them; procedures for diagnosing nutritional deficiences, including physical examinations and laboratory tests; Canadian nutritional conditions and overall food supply; prevention of malnutrition among various income groups; group feeding problems; nutrition education for children and adults; community organization and nutrition as part of a health program; and national food policies. Many students from other countries attend this course, and the instructors give special attention to helping them apply what they learn to their home problems and home environment.

The course at Coonoor is of three or four months' duration. It is an informal course with no diploma and is designed to provide training in the theoretical and practical aspects of nutrition, both in the laboratory and in the field. The general emphasis is not on research, but rather on practical application of the principles of nutrition to food and health problems. In addition to the formal instruction, there is group discussion of practical problems, brought forward by individual students, and plenty of time is allowed for informal study and elementary laboratory work in any specialized branch of nutrition of particular interest to them. Demonstration experiments on animals are carried out by the students themselves as an important part of the course.

Physicians specializing in nutrition

In many nutrition programs there is need for physicians with knowledge of nutrition, particularly of methods for assessing nutritional status and diagnosing clinical deficiency states.

Some universities and colleges offer advanced courses in nutrition that are open only to physicians. These may be part of a curriculum leading to a diploma in public health or may be offered in curricula leading to other postgraduate medical degrees. An outline of two such courses to be given at the School of Hygiene and Tropical Medicine,[13] University of London, was sent to FAO in 1948 by B. S. Platt, Director

[12] E. W McHenry, *Notes on Public Health Nutrition*, Department of Public Health Nutrition, School of Hygiene, University of Toronto (Unpublished).
[13] B. S. Platt, *Proposals for a University of London Academic Post-Graduate Diploma in Tropical Medicine and Hygiene*, January 1948. (Unpublished.)

of the School's Department of Human Nutrition. One of these is designed for students working toward the Diploma in Tropical Medicine and Hygiene; the other, for students working toward the Diploma in Public Health.

The training in tropical medicine and hygiene is divided into three parts, each occupying three months. Nutrition teaching in the first part of the training covers the fundamental knowledge needed by a medical officer going to the tropics for the first time. Subject matter includes the history and evolution of the science of nutrition; world food surveys; the nature of foods and diets; food technology; socio-economic factors and dietary patterns; food supplies and production; storage and transport of food; malnutrition and undernutrition; and the organization of nutrition work in communities. For this, twelve hours are planned, divided into eight weekly lectures, each followed by films, demonstrations, and exercises.

The second part of the training, as planned, is open only to students who have worked for at least two years in the tropics. This nutrition course consists of eighteen weekly lecture and demonstration periods of one and a half hours each, dealing with biochemistry and physiology, nutrient requirements, dietary deficiency diseases, planning and evaluation of diets, and assessment of nutritional status.

The third part offers intensive advanced work in nutrition for students who have chosen this subject as their field of specialization. This work must be done in a tropical territory, at an approved institution, and under an approved teacher. It consists of three months' study of nutrition in relation to health and hygiene. Among the subjects covered are the assessment of nutritional status, the effects of parasitic disease on nutrition, the relation between agriculture and nutrition, and food processing and storage.

For the students working toward the Diploma in Public Health, the nutrition lectures in Parts I and II are similar to those in the course for the Diploma of Tropical Medicine and Hygiene, but demonstrations are provided separately. When nutrition is the elected special subject, Part III for the Diploma of Public Health consists of a three-months' course of study of the public health aspects of nutrition, covered at the London School of Hygiene and Tropical Medicine but including visits to and work in other centers. The course is designed to equip the students to guide and direct nutritional investigations, to interpret their results, and to advise on measures for improving nutrition and assessing their effects. It includes a study of food production on farms and in allotments and gardens; food handling and technology, storage and infestation; community feeding, including industrial and school feeding; hospital dietetic work; infant welfare and child health; clinical surveys, including school medical examinations and investigations of relationships between industrial health and work output; food consumption studies; the socio-economic aspects of nutrition, including family budgeting, rationing, food prices, and food supply; and the nutritional aspects of health education.

APPENDIX III

NUTRITION IN GENERAL MEDICINE

Stanley Davidson, Department of Medicine, University of Edinburgh, Scotland, after consultation with his professional colleagues, has outlined a procedure for including nutrition in general medical training.[1] "Doctors in practice at the present time," he writes by way of introduction, "have insufficient knowledge of the science of nutrition and the practice of dietetics. Since the family doctor is the man above all who can best advise the people on nutritional matters, it is essential that all universities should give careful thought as to how future generations of doctors can be made more competent in this respect than those in practice at the present time."

The type of instruction in nutrition to be given medical students, according to Professor Davidson, "should not be a single intensive continuous course occupying one or more hours daily for several weeks or months, but should begin in the student's first year, when he joins the botany class, and should continue at appropriate intervals in the different departments of the faculty of medicine throughout the whole five[2] years of undergraduate work." He suggests that certain phases of nutrition should be incorporated into the courses in botany, physiology, medicine, surgery, obstetrics, pediatrics, public health, and therapeutics.

Professor Davidson stresses the need to make one person responsible for coordinating nutrition training throughout the years of medical study. He suggests that the professor of medicine or therapeutics might undertake this task, or, alternatively, that a senior lecturer in nutrition might be appointed for this purpose. The special lecturer would, in addition, teach the physiology of nutrition and practical dietetics to undergraduate and postgraduate medical students and dietitians, work as a physician in the hospital dietetic department, and carry out clinical and laboratory research in nutrition. Such an appointment has been made at the University of Edinburgh.

Frederick Stare, Department of Nutrition, Harvard School of Public Health, Boston, Mass., U.S.A.[3] has suggested a somewhat similar method of introducing nutrition into medical training. He mentions biochemistry and bacteriology as additional subjects through which nutrition can be taught. In biochemistry, general lectures should introduce the biochemistry of proteins, fats, carbohydrates, minerals, and water balance, and there should be specific lectures on the vitamins and minerals. The place of nutrition in medicine should be included, as should laboratory work on experimental nutrition. The bacteriology course should cover bacterial nutrition and its relation to chemotherapy and to the study of nutrition problems in man. Stare also suggests discussion of laboratory methods used in the diagnosis of nutritional deficiencies.

C. S. Davidson of the Harvard School of Medicine[4] points out that conditioned nutritional deficiencies, such as those which occur when malaria is superimposed on a mild dietary deficiency, may be more important than classical primary deficiency disease and should be emphasized in medical training. He stresses the importance of the relation between health and agriculture and urges that this should be brought to the attention of medical students.

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[1] L. S. P. Davidson. *The Teaching of Nutrition to Medical Students.* The Proceedings of the Nutrition Society, Cambridge, England, 8 February 1947.

[2] Now six years.

[3] Frederick J. Stare, *Professional Training in Nutrition,* Report presented at the National Health Assembly, Washington, D.C. (Unpublished.)

[4] Personal communication from C. S. Davidson, School of Medicine, Harvard University, Cambridge, Mass., U.S.A.

APPENDIX IV

"TWO LITTLE LAMBS"

Anthony and Kosta started in the early morning for grandfather's farm. He had been telling them he would give each of them a little lamb.

The two brothers could not wait for the day when grandfather would keep his promise. Walking along the narrow lane between the green fields they soon reached the farm. They found grandfather sitting by the pond. In his arms he was holding two lovely little lambs, and stroking their heads.

"Good morning, grandfather," said the children.

"Hello there," said grandfather. "Look," he said, "these lambs are for you."

The children rushed to their grandfather. Each took his own lamb in his arms and started skipping and shouting for joy.

"Careful!" said grandfather, "you must take good care of them, so they will grow and get nice and fat."

From then on the first thing the children used to do when they came back from school was to look after their little lambs. Anthony, who liked milk very much, gave his lamb milk from Uncle Tom's ewe.

Kosta did not like milk, so he thought his lamb would not like it. He gave his lamb only grass, gathered from a near-by field. The days were passing and the little lambs were growing. But Anthony's lamb grew faster than Kosta's. Kosta was worried about this and could not understand why his lamb did not grow like Anthony's.

One day grandfather came to town to spend a few days with them.

Anthony, with great pride, showed him his little lamb, which had become tall and fat, with straight little legs and beautiful white wool; it was a pleasure to look at.

"Kostaki, where is your lamb?" asked grandfather, who knew there was something wrong with Kosta's lamb. Kosta shyly brought his lamb. The poor little thing was thin, its little legs were crooked, and its wool looked stringy and dirty. It could hardly walk, and it always wanted to lie down.

"What do you feed it?" asked grandfather.

"Grass," said Kosta.

"And you, Anthony?"

"Well, grandfather, I give my little lamb milk every day and a little grass."

"Good! That is why your little lamb has grown so fat and pretty. My children, to build a house you want iron, earth, lime, timber, and stones. To build a little lamb or a little child and make it grow up well, you want the building materials that are in food. Many of these building materials which a little lamb or a little child needs to make it grow are found in milk.

"There is something in milk that makes strength, and something that makes strong bones, straight limbs, straight backs, and good teeth. Little lambs that drink milk every day are lively and playful. Little children who eat all their food and drink at least three cups of milk every day become strong, tall, and heavy. They grow strong backs, strong arms and legs, and good teeth. They play well, they are good at sports, and they learn their lessons easily."

From that day on, Kosta, gave milk to his little lamb. And he used to drink it himself because he too wanted to grow lively and strong.

APPENDIX V

Excerpt from a Broadcast by the "Radio Doctor," Given for the Ministry of Food in the United Kingdom during the Second World War

This morning it's habits, good and bad. To a good extent health is a matter of healthy habits, whether it's neck washing, nose blowing, teeth cleaning, water drinking, fresh air, exercise, and so on.

Don't think only of bad habits, like using naughty words, or wiping your razor blade on the best towel. The habits, good and bad, which are laid down in our early days become as much part of our beings as our noses and our ears. And this applies to food.

In general we start life without preferences, unless it's for a dry napkin. Anyway, no food preferences—unless for breast milk. Then, as we begin to get our teeth into things we borrow our likes and dislikes from those we live with. We find, for example, that people eat potatoes without cursing and without going into ectasies of delight. Hence the potato habit.

Turnips, some people like while others are sniffy about them. So we join one side or the other. Marrow (vegetable), well, father says it's water, mother says it's mushy. And, if we don't look out, we think of it as water wrapped up, or possibly slimy—and we don't like it. And there are pro-tapiocans and anti-tapiocans, green lovers and green loathers, and for-tripes and anti-tripes.

And so the game goes on. The point is that our feeding habits are in large part the work of our parents. Now what are the right habits? What must we implant in the minds of our children. To get good feeding rules implanted is far more important than getting them to be good little boys or good little girls. So which foods really matter?

Well, first of all builders matter. There must be builders each day and every day. First we must instill a love of milk. It isn't a mamby-pamby drink. Explain to children that it's strong drink, that it turns small boys into big men, and little girls into beautiful, if not substantial, women.

And now cheese. Cheese isn't only a grownup's food. It's children's food. It's the most neglected of our good foods. Implant in children a love of cheese. And in my experience it isn't difficult.

On balance children seem to prefer it cooked. There's macaroni cheese—cheese pie. But the important thing is—learn to like cheese . . .

Designed and Printed by
H. K. Press, Washington, D. C.

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